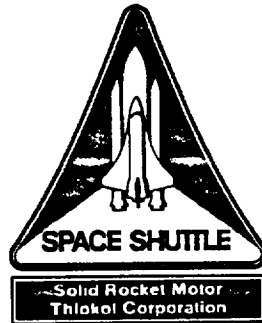


50497

TWR-60699



Appendix C Nozzle PFORs

Final Postflight Hardware Evaluation Report 360T025 (RSRM-25, STS-46)

March 1993

Prepared for:

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GEORGE C. MARSHALL SPACE FLIGHT CENTER
MARSHALL SPACE FLIGHT CENTER, ALABAMA 35812

Contract No.	NAS8-38100
DR No.	4-23
WBS No.	4C601-04-01
ECS No.	SS4768

Thiokol CORPORATION
SPACE OPERATIONS

P.O. Box 707, Brigham City, Utah 84302-0707 (801) 863-3511

(NASA-CR-192565) POSTFLIGHT
HARDWARE EVALUATION 360T025
(RSRM-25, STS-46). APPENDIX C:
NOZZLE PFORs Final Report (Thiokol
Corp.) 75 p

N93-30620

Unclass

G3/16 0171965

NOZZLE REQUIRED EVALUATION FORMS LIST

<u>PFOR #</u>	<u>Title</u>	<u>Side</u>	<u>Joint, Part, or Location</u>	<u>Final Report Page Number</u>
C-1	Nozzle Assembly Quick-look Condition	Left	N/A	C-1
C-2	Nozzle Joint Condition	Left	Joint #2	C-2
C-3	Nose Inlet-to-Flex Bearing-to-Cowl Joint Condition Drawing Worksheet	Left	Joint #2	C-3
C-2	Nozzle Joint Condition	Left	Joint #3	C-4
C-4	Nose Inlet-to-Throat Joint Condition Drawing Worksheet	Left	Joint #3	C-5
C-2	Nozzle Joint Condition	Left	Joint #4	C-6
C-5	Throat-to-Forward Exit Cone Joint Condition Drawing Worksheet	Left	Joint #4	C-7
C-2	Nozzle Joint Condition	Left	Joint #5	C-8
C-6	Aft End Ring-to-Fixed Housing Joint Condition Drawing Worksheet	Left	Joint #5	C-9
C-7	Cowl Insulation Segment Condition	Left	Cowl	C-10
C-8	Flexible Bearing, Flexible Bearing Protector, and Flexible Boot Condition	Left	Flexible Bearing, Protector, & Boot	C-11
C-9	Flexible Bearing Protector Thickness Measurements	Left	Flexible Bearing Protector	C-12
C-10	Throat Diameter Measurements	Left	Throat	C-13

(Note: Clarification PFORs will be inserted after the applicable required PFOR in the Final Report and will have the same page number as the required PFOR appended by a sequential alphabetic extension.)

NOZZLE REQUIRED EVALUATION FORMS LIST (Cont.)

<u>PFOR #</u>	<u>Title</u>	<u>Side</u>	<u>Joint, Part, or Location</u>	<u>Final Report Page Number</u>
C-11	Outer Boot Ring Char and Erosion Measurements and Flexible Boot Condition	Left	Outer Boot Ring & Flexible Boot	C-14
C-12	Nozzle Subassembly Phenolic Bondline Condition	Left	Aft Exit Cone	C-15
C-12	Nozzle Subassembly Phenolic Bondline Condition	Left	Forward Exit Cone	C-16
C-12	Nozzle Subassembly Phenolic Bondline Condition	Left	Throat	C-17
C-12	Nozzle Subassembly Phenolic Bondline Condition	Left	Forward Nose & Aft Inlet Rings	C-18
C-12	Nozzle Subassembly Phenolic Bondline Condition	Left	Nose Cap	C-19
C-12	Nozzle Subassembly Phenolic Bondline Condition	Left	Cowl	C-20
C-12	Nozzle Subassembly Phenolic Bondline Condition	Left	Fixed Housing	C-21
C-13	Cowl Ring Phenolic (SCP) Section Condition	Left	Cowl	C-22
C-14	Forward Exit Cone Phenolic (CCP) Section Condition	Left	Forward Exit Cone	C-23
C-15	Fixed Housing Phenolic (CCP) Section Condition	Left	Fixed Housing	C-24
C-16	Throat Inlet Assembly Phenolic (CCP) Section Condition	Left	Throat	C-25
C-17	Nose Cap Phenolic (CCP) Section Condition	Left	Nose Cap	C-26
C-18	Forward Nose Ring and Aft Inlet Ring Phenolic (CCP) Section Condition	Left	Forward Nose & Aft Inlet Rings	C-27

(Note: Clarification PFORs will be inserted after the applicable required PFOR in the Final Report and will have the same page number as the required PFOR appended by a sequential alphabetic extension.)

NOZZLE REQUIRED EVALUATION FORMS LIST (Cont.)

<u>PFOR #</u>	<u>Title</u>	<u>Side</u>	<u>Joint, Part, or Location</u>	<u>Final Report Page Number</u>
C-1	Nozzle Assembly Quick-look Condition	Right	N/A	C-28
C-2	Nozzle Joint Condition	Right	Joint #2	C-29
C-3	Nose Inlet-to-Flex Bearing-to-Cowl Joint Condition Drawing Worksheet	Right	Joint #2	C-30
C-2	Nozzle Joint Condition	Right	Joint #3	C-31
C-4	Nose Inlet-to-Throat Joint Condition Drawing Worksheet	Right	Joint #3	C-32
C-2	Nozzle Joint Condition	Right	Joint #4	C-33
C-5	Throat-to-Forward Exit Cone Joint Condition Drawing Worksheet	Right	Joint #4	C-34
C-2	Nozzle Joint Condition	Right	Joint #5	C-35
C-6	Aft End Ring-to-Fixed Housing Joint Condition Drawing Worksheet	Right	Joint #5	C-36
C-7	Cowl Insulation Segment Condition	Right	Cowl	C-37
C-8	Flexible Bearing, Flexible Bearing Protector, and Flexible Boot Condition	Right	Flexible Bearing, Protector, & Boot	C-38
C-9	Flexible Bearing Protector Thickness Measurements	Right	Flexible Bearing Protector	C-39
C-10	Throat Diameter Measurements	Right	Throat	C-40

(Note: Clarification PFORs will be inserted after the applicable required PFOR in the Final Report and will have the same page number as the required PFOR appended by a sequential alphabetic extension.)

NOZZLE REQUIRED EVALUATION FORMS LIST (Cont.)

<u>PFOR #</u>	<u>Title</u>	<u>Side</u>	<u>Joint, Part, or Location</u>	<u>Final Report Page Number</u>
C-11	Outer Boot Ring Char and Erosion Measurements and Flexible Boot Condition	Right	Outer Boot Ring & Flexible Boot	C-41
C-12	Nozzle Subassembly Phenolic Bondline Condition	Right	Aft Exit Cone	C-42
C-12	Nozzle Subassembly Phenolic Bondline Condition	Right	Forward Exit Cone	C-43
C-12	Nozzle Subassembly Phenolic Bondline Condition	Right	Throat	C-44
C-12	Nozzle Subassembly Phenolic Bondline Condition	Right	Forward Nose & Aft Inlet Rings	C-45
C-12	Nozzle Subassembly Phenolic Bondline Condition	Right	Nose Cap	C-46
C-12	Nozzle Subassembly Phenolic Bondline Condition	Right	Cowl	C-47
C-12	Nozzle Subassembly Phenolic Bondline Condition	Right	Fixed Housing	C-48
C-13	Cowl Ring Phenolic (SCP) Section Condition	Right	Cowl	C-49
C-14	Forward Exit Cone Phenolic (CCP) Section Condition	Right	Forward Exit Cone	C-50
C-15	Fixed Housing Phenolic (CCP) Section Condition	Right	Fixed Housing	C-51
C-16	Throat Inlet Assembly Phenolic (CCP) Section Condition	Right	Throat	C-52
C-17	Nose Cap Phenolic (CCP) Section Condition	Right	Nose Cap	C-53
C-18	Forward Nose Ring and Aft Inlet Ring Phenolic (CCP) Section Condition	Right	Forward Nose & Aft Inlet Rings	C-54

(Note: Clarification PFORs will be inserted after the applicable required PFOR in the Final Report and will have the same page number as the required PFOR appended by a sequential alphabetic extension.)

POSTFLIGHT OBSERVATION RECORD (PFOR) C-1
Nozzle Assembly Quick-look Condition

Motor No.: 360T025	Side: Left (A)	Date: 8-13-92
Assessment Engineer(s)/Inspector(s): M. Clark		
Nozzle Assembly Quick-look Observations:		
	Yes	No
A. Metal Damage Due to Transportation or Handling?	_____	☒
B. Phenolic Damage Due to Transportation or Handling?	_____	☒
C. Foreign Material?	_____	☒

Notes / Comments

1) Paint rubbed off on O.D of aft flange (fixed housing) due to contact with transportation cradle at 237°, 239°, 241°, 243°, 245°, 247°, 250°, 257°, 260°, 263°, 277°, 281°, 285°, 290°, 300°, 302° and 305°. Paint missing only. No damage to metal housing. Cradle is made of wood. The nozzle may have shifted slightly in the cradle.

eliminary PFAR(s)? _____ Yes ☒ No Preliminary PFAR Number(s): _____
Clarification Form(s)? _____ Yes ☒ No Clarification Form Page No.(s): _____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-2
Internal Nozzle Joint Condition

Motor No.: 360T025	Side: Left (A)	Date: 8/18/92
Assessment Engineer(s)/Inspector(s): R. Quick R. TELLERS, M. Clark, P. Miller		
Joint: Nose Inlet-to-Flex Bearing-to-Cowl (Joint #2)		

Internal Nozzle Joint Observations:

	Yes	No	Comment #
A. Gas Penetration in the RTV (Terminated, Through)?	☐	☒	
B. RTV Not Below Char Line?	☐	☒	
C. RTV To the Primary O-ring?	☒	☐	
D. RTV Past the Primary O-ring?	☒	☐	
E. Uncured RTV?	☐	☒	
F. Voids Within RTV?	☐	☒	
G. Foreign Material?	☐	☒	
H. Heat Affected or Eroded Virgin CCP, GCP/SCP, or adhesive?	☐	☒	
I. Damaged Phenolics?	☐	☒	
J. Bondline Edge Separations? Use Clarification Form.	☐	☒	
K. Phenolics Axially Displaced From Housing?	☐	☒	
L. Heat Affected Metal?	☐	☒	
M. Unbonded or Blistered Paint?	☒	☒ m/c	2
N. Corrosion?	☒	☐	1
O. Excessive Grease in Threaded Bolt Holes?	☐	☒	
P. Bolt Hole Damage (Through, Threaded/Helical Coil Insert)?	☐	☒	
Q. Bent or Broken Bolts?	☐	☒	
R. Metal Damage (Joints or Housings)?	☐	☒	

Notes / Comments /

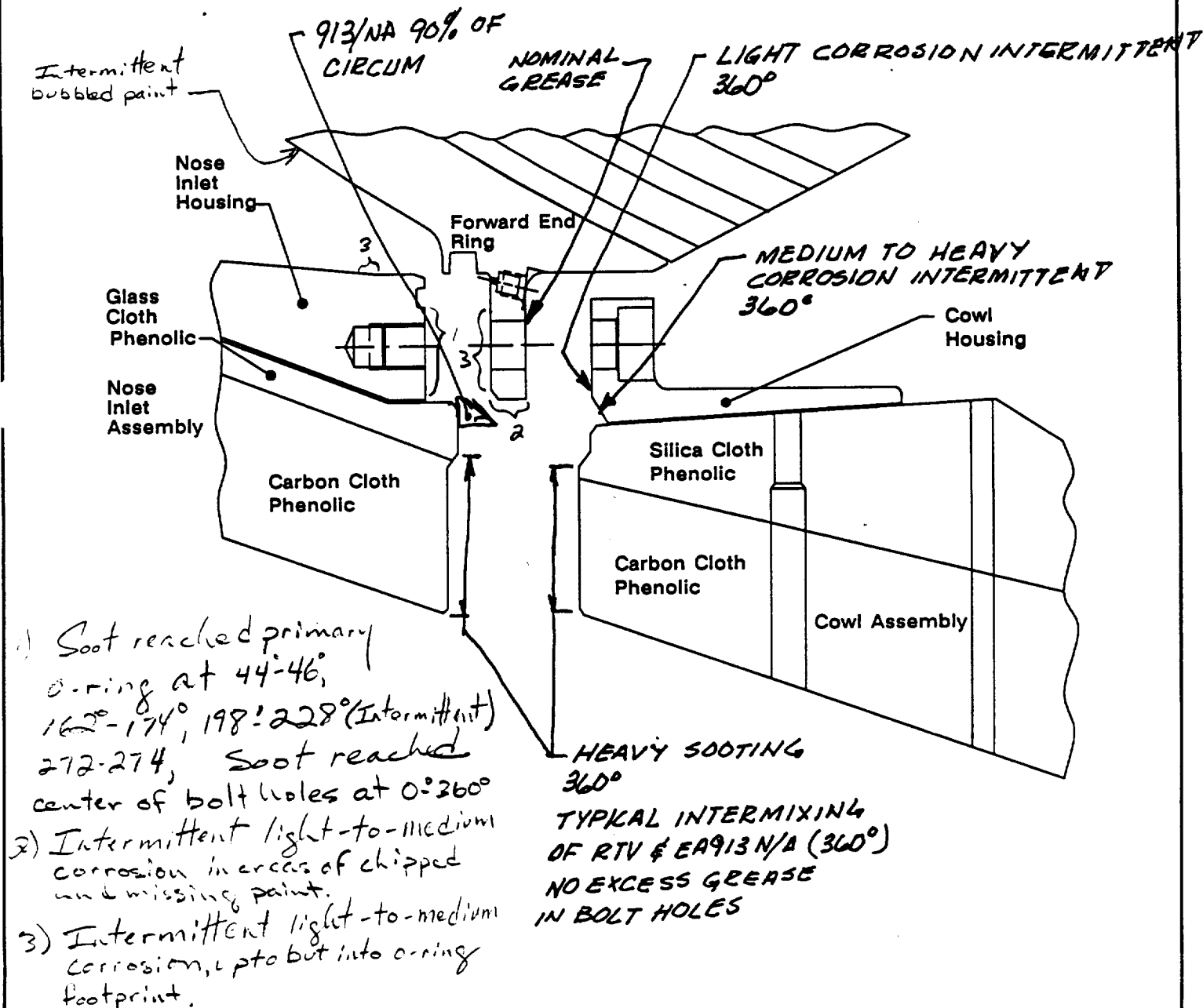
- 1) Corrosion present and noted on page C-3
- 2) Intermittent bubbled paint on flex bearing forward end ring O.D. at various axial positions around the circumference. The largest bubble measured 0.20 inch diameter at 13°. Preliminary PFAR was written as a result of this condition. Bubble removed at 13°. No corrosion found on metal surface.

Preliminary PFAR(s)? ☒ Yes ☐ No	Preliminary PFAR Number(s): 46C-04
Clarification Form(s)? ☐ Yes ☒ No	Clarification Form Page No.(s):

POSTFLIGHT OBSERVATION RECORD (PFOR) C-3
Nose Inlet-to-Flex Bearing-to-Cowl Joint (Joint #2) Condition Drawing Worksheet

Motor No.: 360T025	Side: Left (A)	Date: 8/18/92
Assessment Engineer(s)/Inspector(s): E. QUICK, R. TELLERS, M. Clark, D. Miller		

Sketch Observations Below (include locations and sizes of sketched features):



Clarification Form(s)? ☐ Yes ☒ No Clarification Form Page No. (s): _____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-2
Internal Nozzle Joint Condition

Motor No.: 360T025	Side: Left (A)	Date: 8-19-92
Assessment Engineer(s)/Inspector(s): M. Clark, P. Miller		
Joint: Nose Inlet-to-Throat (Joint #3)		

Internal Nozzle Joint Observations:

	Yes	No	Comment #
A. Gas Penetration in the RTV (Terminated, Through)?		✓	
B. RTV Not Below Char Line?		✓	
C. RTV To the Primary O-ring?		✓	
D. RTV Past the Primary O-ring?		✓	
E. Uncured RTV?		✓	
F. Voids Within RTV?		✓	
G. Grease Inhibiting RTV Backfill?		✓	
H. Foreign Material?		✓	
I. Heat Affected or Eroded Virgin CCP, GCP/SCP, or adhesive?		✓	
J. Damaged Phenolics?		✓	
K. Bondline Edge Separations? Use Clarification Form.	✓		2
L. Phenolics Axially Displaced From Housing?		✓	
M. Heat Affected Metal?		✓	
N. Unbonded or Blistered Paint?		✓	
O. Corrosion?	✓		1
P. Alignment Pin Damage?		✓	
Q. Excessive Grease In Threaded Bolt Holes?		✓	
R. Bolt Hole Damage (Through, Threaded/Helical Coil Insert)?		✓	
S. Bent or Broken Bolts?		✓	
T. Metal Damage (Joints or Housings)?		✓	

Notes / Comments

- 1) Special Issues 3.2.3.2 Light-to-medium corrosion observed on inboard edge of throat forward end. No other metal damage.
- 2) Separations documented on C-4A

Preliminary PFAR(s)?	Yes	✓ No	Preliminary PFAR Number(s):
Clarification Form(s)?	✓ Yes	No	Clarification Form Page No.(s): C-4A

POSTFLIGHT OBSERVATION RECORD (PFOR) C-4
Nose Inlet-to-Throat Joint (Joint #3) Condition Drawing Worksheet

Motor No.: 360T025

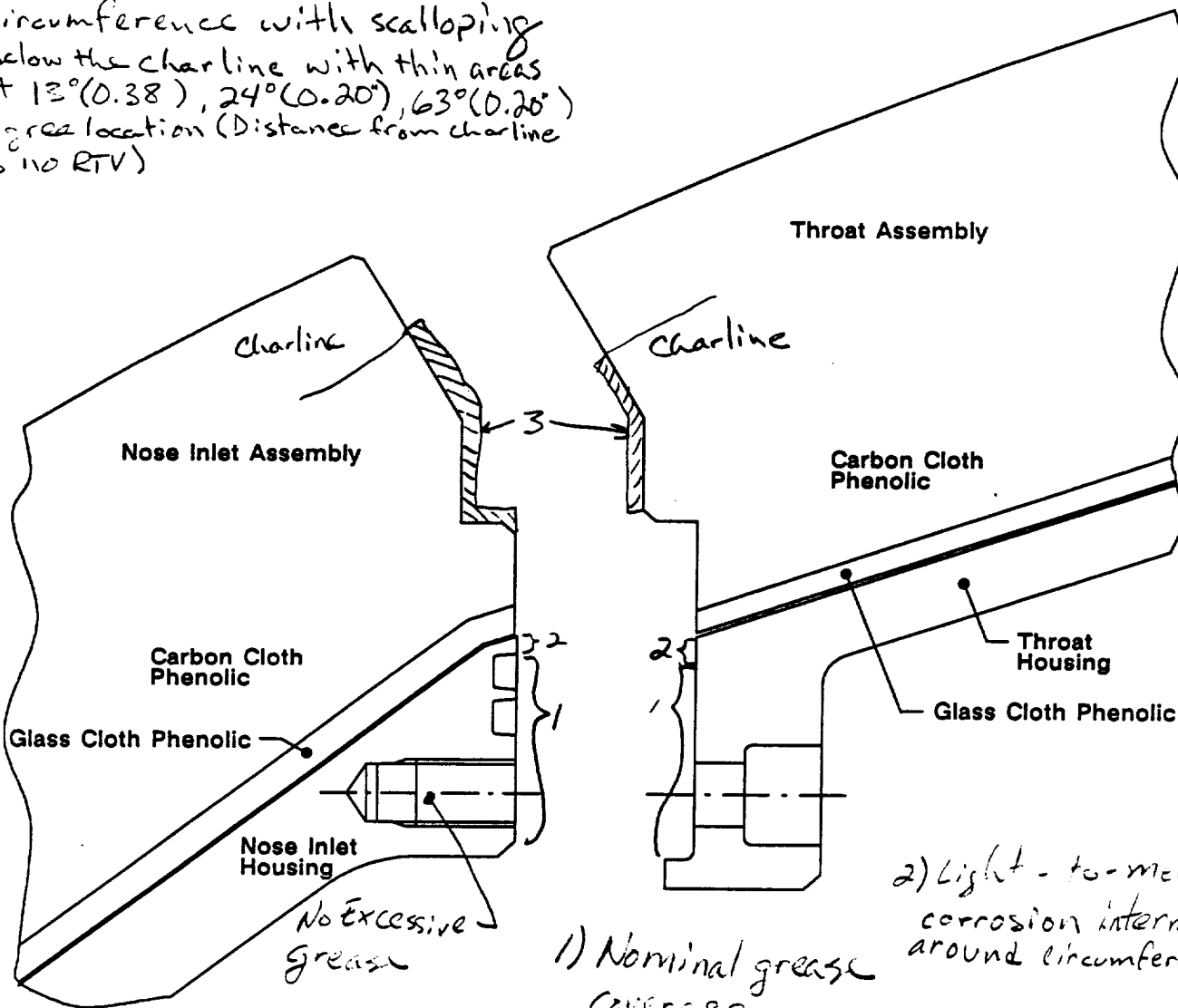
Side: Left (A)

Date: 8-18-92

Assessment Engineer(s)/Inspector(s): M. Clark, P. Miller

Sketch Observations Below (include locations and sizes of sketched features):

3) RTV below charline complete
circumference with scalloping
below the charline with thin areas
at 13°(0.38), 24°(0.20), 63°(0.20)
Degree location (Distance from charline
to no RTV)



Clarification Form(s)? ☐ Yes ☒ No

Clarification Form Page No. (s): _____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-2

Internal Nozzle Joint Condition

Motor No.: 360T025	Side: Left (A)	Date: 8-14-92
Assessment Engineer(s)/Inspector(s): M.E. Clark, P. Miller, B. Selby		
Joint: Throat-to-Forward Exit Cone (Joint #4)		

Internal Nozzle Joint Observations:	Yes	No	Comment #
A. Gas Penetration in the RTV (Terminated, Through)?	☐	☒	
B. RTV Not Below Char Line?	☐	☒	
C. RTV To the Primary O-ring?	☒	☒	3
D. RTV Past the Primary O-ring?	☐	☒	
E. Uncured RTV?	☐	☒	
F. Voids Within RTV?	☐	☒	
G. Grease Inhibiting RTV Backfill?	☐	☒	
H. Foreign Material?	☐	☒	
I. Heat Affected or Eroded Virgin CCP, GCP/SCP, or adhesive?	☐	☒	
J. Damaged Phenolics?	☐	☒	
K. Bondline Edge Separations? Use Clarification Form.	☒	☐	2
L. Phenolics Axially Displaced From Housing?	☐	☒	
M. Heat Affected Metal?	☐	☒	
N. Unbonded or Blistered Paint?	☐	☒	
O. Corrosion?	☒	☐	1
P. Alignment Pin Damage?	☐	☒	
Q. Excessive Grease in Threaded Bolt Holes?	☐	☒	
R. Bolt Hole Damage (Through, Threaded/Helical Coil Insert)?	☐	☒	
S. Bent or Broken Bolts?	☐	☒	
T. Metal Damage (Joints or Housings)?	☐	☒	

Notes / Comments

1) Special Issues 3.2.3.2 Light-to-medium corrosion on inboard 0.07" of throat aft surface. Light burnishing on throat aft surface that is documented on joints and seals PFOR, page B-25.

2) Edge separations documented on C-6A & C-6B

3) RTV reached primary o-ring at 0-45, 83-105 and 137-300 degrees.

Preliminary PFAR(s)?	☐ Yes ☒ No	Preliminary PFAR Number(s):
Clarification Form(s)?	☒ Yes ☐ No	Clarification Form Page No.(s): C-6A, C-6B

POSTFLIGHT OBSERVATION RECORD (PFOR) C-5
Throat-to-Forward Exit Cone Joint (Joint #4) Condition Drawing Worksheet

Motor No.: 360T025

Side: Left (A)

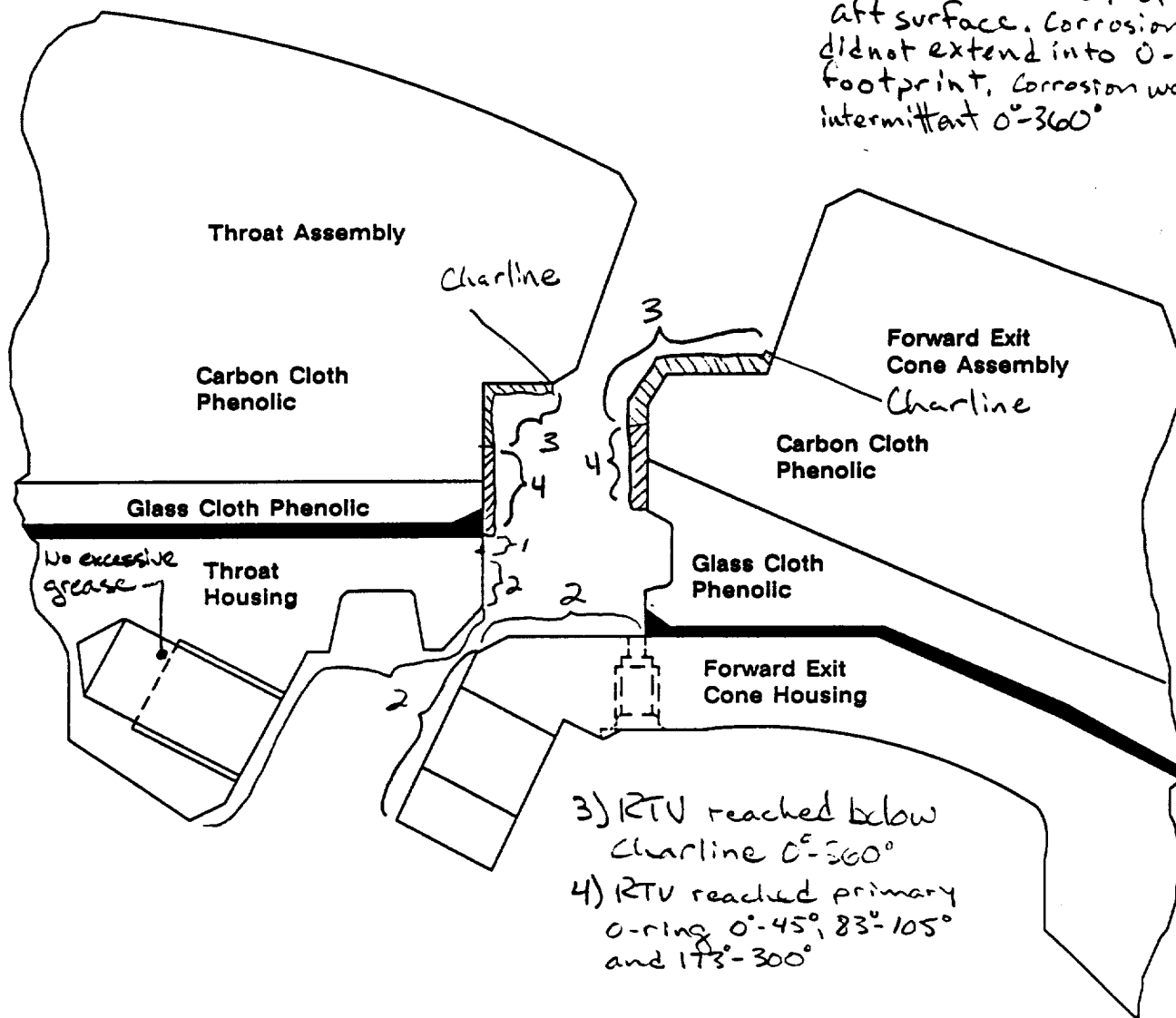
Date: 8-14-92

Assessment Engineer(s)/Inspector(s): M.E. Clark, P. Miller, B. Sell

Sketch Observations Below (include locations and sizes of sketched features):

2) Nominal grease and
no corrosion

1) Corrosion (Light-to-medium)
on in-board 0.07" of throat
aft surface. Corrosion
did not extend into O-ring
footprint. Corrosion was
intermittant 0°-360°



Clarification Form(s)? ☐ Yes ☒ No

Clarification Form Page No.(s):

POSTFLIGHT OBSERVATION RECORD (PFOR) C-2
Internal Nozzle Joint Condition

Motor No.: 360T025	Side: Left (A)	Date: 8-17-92
Assessment Engineer(s)/Inspector(s): QUICK - LANGE		
Joint: Aft End Ring-to-Fixed Housing (Joint #5)		

Internal Nozzle Joint Observations:	Yes	No	Comment #
A. Gas Penetration in the RTV (Terminated, Through)?		☒	
B. RTV Not Below Char Line?		☒	
C. RTV To the Primary O-ring?		☒	
D. RTV Past the Primary O-ring?		☒	
E. Uncured RTV?		☒	
F. Voids Within RTV?	☒		1
G. Foreign Material?		☒	
H. Heat Affected or Eroded Virgin CCP, GCP/SCP, or adhesive?		☒	
I. Damaged Phenolics?		☒	
J. Bondline Edge Separations? Use Clarification Form.		☒	
K. Phenolics Axially Displaced From Housing?		☒	
L. Heat Affected Metal?		☒	
M. Unbonded or Blistered Paint?		☒	
N. Corrosion?	☒		
O. Alignment Pin Damage?		☒	
P. Excessive Grease in Threaded Bolt Holes?		☒	
Q. Bolt Hole Damage (Through, Threaded/Helical Coil Insert)?		☒	
R. Bent or Broken Bolts?		☒	
S. Metal Damage (Joints or Housings)?		☒	

Notes / Comments

1. 3 MINOR VOIDS, MAX; CIRCUM 2.0 x .2 w x .10-15 DP

* MINOR SNUBBER SCUFFING

Preliminary PFAR(s)? ☐ Yes ☒ No Preliminary PFAR Number(s): _____

Clarification Form(s)? ☐ Yes ☒ No Clarification Form Page No. (s): _____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-6
Aft End Ring-to-Fixed Housing Joint (Joint #5) Condition Drawing Worksheet

Motor No.: 360T025

Side: Left (A)

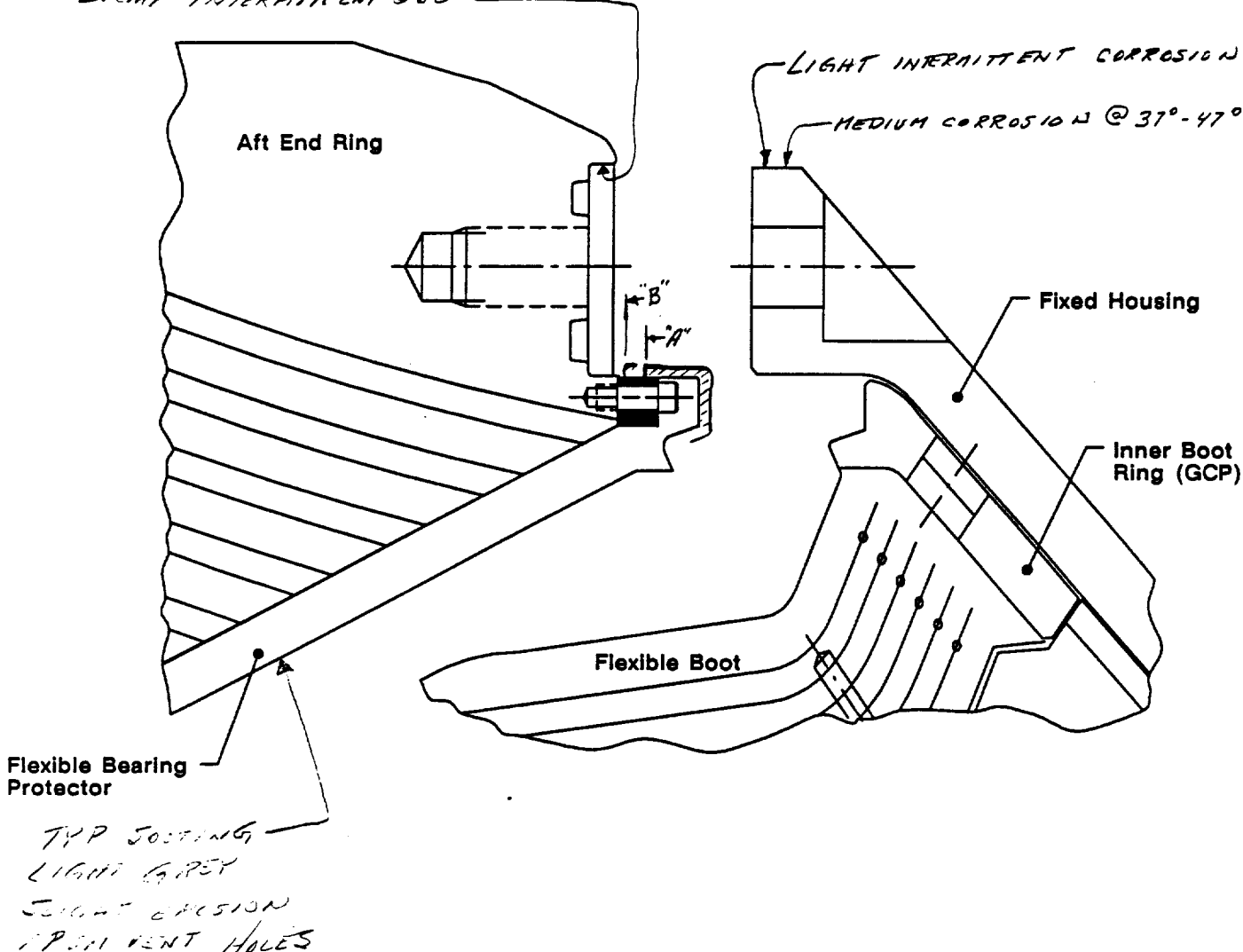
Date: 8-17-92

Assessment Engineer(s)/Inspector(s): QUICK - LANGE

Sketch Observations Below (include locations and sizes of sketched features):

- RTV TO "A" 360°
- RTV TO "B" 305°-310° & 57° (1 1/2")

MEDIUM-HEAVY CORROSION
LIGHT INTERMITTENT 360°



Clarification Form(s)? ☐ Yes ☒ No

Clarification Form Page No.(s): _____

REVISION _____

DOC NO. TWR-60699 VOL
SEC PAGE C-9

POSTFLIGHT OBSERVATION RECORD (PFOR) C-7
Cowl Insulation Segment Condition

Motor No.: 360T025	Side: Left (A)	Date: 8-17-92
--------------------	----------------	---------------

Assessment Engineer(s)/Inspector(s): M. Clark, P. Miller

Cowl Insulation Segment Observations:

	Yes	No	Comment #
A. Spring Pin Holes Completely Through the Cowl Segment?	☐	☒	
B. Abnormal Heat Effects or Erosion?	☐	☒	
C. Soot Between the Cowl Segment and Cowl Housing?	☐	☒	
D. Bondline Failure Mode? Data Collection Only.	N/A	N/A	1

Notes / Comments

1). Bondline failure mode: 34% Cohesive within segments
33% Adhesive-to-segments
33% Adhesive-to-metal

Preliminary PFAR(s)? ☐ Yes ☒ No Preliminary PFAR Number(s): _____

Clarification Form(s)? ☐ Yes ☒ No Clarification Form Page No.(s): _____

REVISION _____

DOC NO. TWR-60699	VOL
SEC	PAGE C-10

POSTFLIGHT OBSERVATION RECORD (PFOR) C-8
Flexible Bearing, Flexible Bearing Protector, and Flexible Boot Condition

Motor No.: 360T025	Side: Left (A)	Date: 8-19-92
Assessment Engineer(s)/Inspector(s): M. Clark, L. Wilkes, T. Freston		
<u>Flexible Bearing, Bearing Protector, and Boot Observations:</u>		
	Yes	No
A. Bearing Protector Burn-Through?	☐	☒
B. Cracks Through the Bearing Protector?	☐	☒
C. Bearing Protector Heat Effects or Erosion Other Than at Cowl Vent Hole Locations?	☐	☒
D. Soot Between the Bearing Protector and Flexible Bearing?	☐	☒
E. Heat Effects to the Flexible Bearing?	☐	☒
F. Bent or Broken Bearing Protector Bolts?	☐	☒
G. Flexible Boot Burn-Through?	☐	☒
H. Abnormal Heat Effects or Erosion to Flexible Boot ID?	☐	☒
I. Foreign Material In Boot Cavity?	☐	☒

Notes / Comments

1) Special Issues 3.3.4 No bent or broken bolts found.

Preliminary PFAR(s)? ☐ Yes ☒ No **Preliminary PFAR Number(s):** _____

Clarification Form(s)? ☐ Yes ☒ No **Clarification Form Page No.(s):** _____

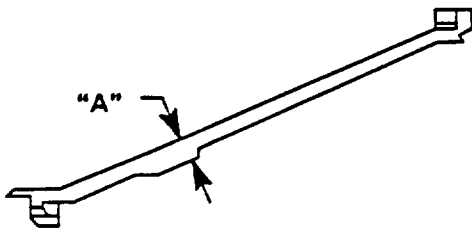
POSTFLIGHT OBSERVATION RECORD (PFOR) C-9
Flexible Bearing Protector Thickness Measurements

Motor No.: 360T025	Side: Left (A)	Date: 8-19-92
--------------------	----------------	---------------

Assessment Engineer(s)/Inspector(s): R.R. Gallegos

Record the Flexible Bearing Protector Gas Impingement Area Thickness Measurements (see figure) Below:

Degree Location	Thickness Measurement "A" (inches)	Degree Location	Thickness Measurement "A" (inches)	Degree Location	Thickness Measurement "A" (inches)
0	<u>.688"</u>	120	<u>.683"</u>	240	<u>.714"</u>
10	<u>.681"</u>	130	<u>.710"</u>	250	<u>.714"</u>
20	<u>.682"</u>	140	<u>.708"</u>	260	<u>.720"</u>
30	<u>.699"</u>	150	<u>.701"</u>	270	<u>.709"</u>
40	<u>.690"</u>	160	<u>.703"</u>	280	<u>.700"</u>
50	<u>.698"</u>	170	<u>.686"</u>	290	<u>.689"</u>
60	<u>.702"</u>	180	<u>.698"</u>	300	<u>.701"</u>
70	<u>.703"</u>	190	<u>.703"</u>	310	<u>.719"</u>
80	<u>.690"</u>	200	<u>.712"</u>	320	<u>.715"</u>
90	<u>.683"</u>	210	<u>.713"</u>	330	<u>.697"</u>
100	<u>.663"</u>	220	<u>.714"</u>	340	<u>.697"</u>
110	<u>.666"</u>	230	<u>.703"</u>	350	<u>.697"</u>



* "A" is the minimum thickness of the bearing protector in-line with the cowl vent holes. It corresponds to the deepest gas impingement location.

Notes / Comments

Preliminary PFAR(s)? ☐ Yes ☒ No

Preliminary PFAR Number(s): _____

Clarification Form(s)? ☐ Yes ☒ No

Clarification Form Page No.(s): _____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-10
Throat Diameter Measurements (Data Collection Only)

Motor No.: 360T025	Side: Left (A)	Date: 8-18-92										
Assessment Engineer(s)/Inspector(s): M. Clark, R. Vanbeverekom, J. Garn												
Record the Nozzle Throat Diameter Measurements Below: <table style="margin-left: auto; margin-right: auto;"><thead><tr><th style="text-align: center;">Degree Location</th><th style="text-align: center;">Diameter Measurement (Inches)</th></tr></thead><tbody><tr><td style="text-align: center;">0</td><td style="text-align: center;"><u>55.900"</u></td></tr><tr><td style="text-align: center;">45</td><td style="text-align: center;"><u>55.901"</u></td></tr><tr><td style="text-align: center;">90</td><td style="text-align: center;"><u>55.923"</u></td></tr><tr><td style="text-align: center;">135</td><td style="text-align: center;"><u>55.913"</u></td></tr></tbody></table>			Degree Location	Diameter Measurement (Inches)	0	<u>55.900"</u>	45	<u>55.901"</u>	90	<u>55.923"</u>	135	<u>55.913"</u>
Degree Location	Diameter Measurement (Inches)											
0	<u>55.900"</u>											
45	<u>55.901"</u>											
90	<u>55.923"</u>											
135	<u>55.913"</u>											
Notes / Comments												

Clarification Form(s)? ☐ Yes ☒ No Clarification Form Page No.(s): _____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-11
Outer Boot Ring Char and Erosion Measurements and Flexible Boot Condition

Motor No.: 360T025	Side: Left (A)	Date: 12/5/82		
Assessment Engineer(s)/Inspector(s): J. J. Jones				
Flexible Boot/Outer Boot Ring Separation Observations:		Yes No Comment #		
A. Heat Effects in Boot/OBR Separation?		_____ <u>✓</u> _____		
Record the Outer Boot Ring Char and Erosion Measurements Below:				
Station	0°	90°	180°	270°
Location	Erosion Char	Erosion Char	Erosion Char	Erosion Char
8.0	<u>.04</u> <u>.89</u>	<u>.04</u> <u>.96</u>	<u>.02</u> <u>1.01</u>	<u>.04</u> <u>.94</u>
9.0	<u>.03</u> <u>.82</u>	<u>.04</u> <u>.85</u>	<u>.02</u> <u>.96</u>	<u>.05</u> <u>.84</u>
10.0	<u>0</u> <u>.77</u>	<u>0</u> <u>.88</u>	<u>0</u> <u>.86</u>	<u>.06</u> <u>.80</u>
11.3	<u>.02</u> <u>.78</u>	<u>.02</u> <u>.83</u>	<u>.02</u> <u>.88</u>	<u>.04</u> <u>.83</u>
Negative Margin of Safety? _____ Yes <u>✓</u> No _____		Station: _____ Degree: _____		
Record the Number of Plies Remaining on the Flexible Boot:				
Degree Location	Plies Remaining			
0	<u>3.3</u>			
90	<u>3.2</u>			
180	<u>3.1</u>			
270	<u>3.1</u>			
Negative Margin of Safety? _____ Yes <u>✓</u> No _____		Degree: _____		
Notes / Comments				
Preliminary PFAR(s)? _____ Yes _____ No <u>✓</u>		Preliminary PFAR Number(s): _____		
Clarification Form(s)? _____ Yes _____ No <u>✓</u>		Clarification Form Page No. (s): _____		

POSTFLIGHT OBSERVATION RECORD (PFOR) C-12
Nozzle Subassembly Phenolic Bondline Condition

Motor No.: 360T025	Side: Left (A)	Date: 17/SEPT/92
Assessment Engineer(s)/Inspector(s): D. Nelson, P. Miller		
Phenolic Subassembly: Aft Exit Cone Assembly		

Record Primary Bondline/Phenolic Failure Mode Percentage (After Hydrolase and Wedge Removal):

	Degree Location							
	0-90	90-180	180-270	270-360				
Metal-to-Adhesive	10%	5%	5%	10%				
Within Adhesive								
Adhesive-to-GCP	60%	60%	65%	60%				
Within GCP	30%	35%	30%	30%				
GCP-to-CCP								
Within CCP								

Record Secondary Bondline Failure Mode Percentage (After Removal of Remaining Phenolics):

	Degree Location							
Metal-to-Adhesive								
Within Adhesive								
Adhesive-to-GCP								

Phenolic Removal Method: _____

Metal Housing Bondline Surface Observations:

	Yes	No	Comment #
A. Soot?	☐	☒	
B. Voids in Adhesive?	☐	☒	
C. Corrosion?	☐	☒	
D. Foreign Material?	☐	☒	
E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)?	☒	☐	1

Notes / Comments

- 1.) Many small voids in polysulfide groove, approx. max. approx. .2 x .1
- 2.) TWO AREAS OF METAL DAMAGE DUE TO TRANS. OR HANDLING. FIRST AREA LOCATED ON COMPLIANCE RING AT 180° .70" x .60". THE SECOND AREA WAS A ROUNDED CORNER OF THE FWD OD. EDGE FROM 330°-340° MEASURING .07" AXIAL x 6.3" CIRC. PRELIM PFAR 466-09 WAS

Preliminary PFAR(s)? ☒ Yes ☐ No Preliminary PFAR Number(s): 466-09 written.

Clarification Form(s)? ☐ Yes ☒ No Clarification Form Page No.(s): _____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-12
Nozzle Subassembly Phenolic Bondline Condition

Motor No.: 360T025	Side: Right (B) Left (A)	Date: 8-17-92
Assessment Engineer(s)/Inspector(s): M. Clark, P. Miller		
Phenolic Subassembly: Forward Exit Cone Assembly		

Record Primary Bondline/Phenolic Failure Mode Percentage (After Hydrolase and Wedge Removal):

	Degree Location							
	315-45	45-135	135-225	225-315				
Metal-to-Adhesive	50	20	20	20				
Within Adhesive	5	5	5	5				
Adhesive-to-GCP	45	75	75	75				
Within GCP								
GCP-to-CCP								
Within CCP								

Record Secondary Bondline Failure Mode Percentage (After Removal of Remaining Phenolics):

	Degree Location							
Metal-to-Adhesive								
Within Adhesive								
Adhesive-to-GCP								

Phenolic Removal Method: _____

Metal Housing Bondline Surface Observations:

	Yes	No	Comment #
A. Soot?	☒	☒	
B. Voids in Adhesive?	☒	☐	1
C. Corrosion?	☒	☐	2
D. Foreign Material?	☐	☒	

Notes / Comments

- 1) Voids documented on C-16 A
- 2) Medium-to-heavy corrosion in areas of metal-to-adhesive separation
- 3) Photos identified as Right (B)

Preliminary PFAR(s)? ☐ Yes ☒ No Preliminary PFAR Number(s): _____

Clarification Form(s)? ☒ Yes ☐ No Clarification Form Page No.(s): C-16 A

Nozzle Subassembly Bondline Adhesive Void Clarification Form

Motor No.: 360T025

Side: ☒ Left (A) ☐ Right (B)

Date: 8-18-92

Assessment Engineer(s)/Inspector(s): M. Clark, P. Miller

Nozzle Subassembly:

Record Bondline Adhesive Void Measurements and Locations Below:

Degree Location	Void Size		Location on Bonding Surface	
	Axial	Circ.	Distance From Fwd	Distance From Aft
128°	0.90	0.60		12.1
182°	0.80	0.50		12.8
223°	1.10	0.70		10.4
321°	2.60	2.5		5.3
325°	0.80	0.60		3.1
327°	0.90	0.40		2.0
106°	1.20	0.70		7.8

Notes / Comments

Corresponding Comment Number(s): /

POSTFLIGHT OBSERVATION RECORD (PFOR) C-12
Nozzle Subassembly Phenolic Bondline Condition

Motor No.: 360T025 Side: Left (A) Date: 8-19-92

Assessment Engineer(s)/Inspector(s): L.E. WILKES / TREVOR FRESTON

Phenolic Subassembly: Throat Assembly

Record Primary Bondline/Phenolic Failure Mode Percentage (After Hydrolase and Wedge Removal):

SEE NOTE 3

	Degree Location							
	337-22	22-67	67-112	112-157	157-202	202-247	247-292	292-337
Metal-to-Adhesive	100	100	100	100	100	100	95	100
Within Adhesive								
Adhesive-to-GCP							3	
Within GCP							2	
GCP-to-CCP								
Within CCP								

Record Secondary Bondline Failure Mode Percentage (After Removal of Remaining Phenolics):

	Degree Location							
							247-292	
Metal-to-Adhesive							100	
Within Adhesive								
Adhesive-to-GCP								

Phenolic Removal Method: WATER BLAST

Metal Housing Bondline Surface Observations:

- A. Soot?
- B. Voids in Adhesive?
- C. Corrosion?
- D. Foreign Material?

Yes	No	Comment #
☒	☒	
☒	☐	1
☒	☒	2
☐	☒	

Notes / Comments ① SEE GENERAL CLASSIFICATION FORM PAGE C-17A.

- ② LIGHT TO HEAVY RUST CORROSION INTERMITTENTLY OVER FULL CIRCUMFERENCE AND AXIAL LENGTH. HEAVY CORROSION OVER 65% OF METAL INTERFACE.
- ③ THE THROAT PHENOLIC RINGS WERE CUT (WATER BLAST) INTO 8 CIRCUMFERENTIAL SECTIONS.

Preliminary PFAR(s)? ☐ Yes ☒ No Preliminary PFAR Number(s):

Clarification Form(s)? ☒ Yes ☐ No Clarification Form Page No.(s): C-17A

General Hardware Clarification Form

Motor No.: 360T025	Side: ☒ Left (A) ☐ Right (B)	Date: 8-19-92
Assessment Engineer(s)/Inspector(s): L.E. WILKES / T. FRESTON		
Description: THROAT ASSEMBLY LINER BONDLINE ADHESIVE VOIDS		
Sketch Observations Below (include locations and sizes of sketched features):		
• INTERMITTENT WORMHOLE VOIDS OVER AFT AXIAL 25% OF INTERFACE FROM 337°-THRU-0°-TO-70°. AVERAGE SIZE WAS 3.0 AXIAL AND 1.5 CIRCUMFERENTIAL. MAXIMUM SIZE WAS 5.6 AXIAL AND 2.2 CIRCUM. • INTERMITTENT WORMHOLE VOIDS OVER MID AFT 25% OF INTERFACE FROM 355°-THRU-0°-TO-35°. LARGEST AREA OF INTERCONNECTING VOIDS WAS 4.6 AXIAL AND 17.0 CIRCUMFERENTIAL AT 22°. • INTERMITTENT SMALL VOIDS ON THROAT RING AT THROAT INLET RING INTERFACE FROM 337°-THRU-0°-TO-67°. LARGEST VOID WAS 1.7 AXIAL AND 0.65 CIRCUMFERENTIAL. • INTERMITTENT SMALL VOIDS, 0.50 DIA MAXIMUM WERE OBSERVED OVER FULL AXIAL LENGTH AND CIRCUMFERENCE.		

Corresponding Comment Number(s): (1)

REVISION _____

DOC NO.	TWR-60699	VOL
SEC	PAGE C-17A	

POSTFLIGHT OBSERVATION RECORD (PFOR) C-12
Nozzle Subassembly Phenolic Bondline Condition

Motor No.: 360T025	Side: Left (A)	Date: 20-Aug-92
Assessment Engineer(s)/Inspector(s): D. Nielsen, P. Miller		
Phenolic Subassembly: Aft Inlet/Forward Nose Rings		

Record Primary Bondline/Phenolic Failure Mode Percentage (After Hydrolase and Wedge Removal):

	Degree Location							
	0-90	90-180	180-270	270-0				
Metal-to-Adhesive	100%	100%	100%	100%				
Within Adhesive								
Adhesive-to-GCP								
Within GCP								
GCP-to-CCP								
Within CCP								

Record Secondary Bondline Failure Mode Percentage (After Removal of Remaining Phenolics):

	Degree Location							
Metal-to-Adhesive								
Within Adhesive								
Adhesive-to-GCP								

Phenolic Removal Method: Wedges

Metal Housing Bondline Surface Observations:

	Yes	No	Comment #
A. Soot?	☐	☒	
B. Voids in Adhesive?	☒	☐	#1
C. Corrosion?	☒	☐	#2
D. Foreign Material?	☐	☒	

Notes / Comments

- #1. SEE ATTACHED PAGE C-18A
2. Medium To Heavy Corrosion.

Preliminary PFAR(s)? ☐ Yes ☒ No Preliminary PFAR Number(s): _____
Clarification Form(s)? ☒ Yes ☐ No Clarification Form Page No.(s): # C-18A

POSTFLIGHT OBSERVATION RECORD (PFOR) C-12
Nozzle Subassembly Phenolic Bondline Condition

Motor No.: 360T025	Side: Left (A)	Date: 8-20-92						
Assessment Engineer(s)/Inspector(s): O. Nelson, D. Miller								
Phenolic Subassembly: Nose Cap								
Record Primary Bondline/Phenolic Failure Mode Percentage (After Hydrolase and Wedge Removal):								
	Degree Location							
	0-45	45-90	90-135	135-180	180-225	225-270	270-315	315-360
Metal-to-Adhesive	5	5		10	5		5	5
Within Adhesive								
Adhesive-to-GCP								
Within GCP								
GCP-to-CCP	95	95	100	90	95	100	95	95
Within CCP								
Record Secondary Bondline Failure Mode Percentage (After Removal of Remaining Phenolics):								
	Degree Location							
	0-45	45-90	90-135	135-180	180-225	225-270	270-315	315-360
Metal-to-Adhesive	40	25	30	40	35	25	30	40
Within Adhesive								
Adhesive-to-GCP	60	75	70	60	65	75	70	60
Phenolic Removal Method: wedge, hand peel								
Metal Housing Bondline Surface Observations:					Yes	No	Comment #	
A. Soot?					☐	☒	<u>1</u>	
B. Voids in Adhesive?					☒	☐	<u>2</u>	
C. Corrosion?					☒	☐		
D. Foreign Material?					☐	☒		
Notes / Comments								
Special Issues 3.3.1 → LQ1's could not be found								
1. See clarification pg. C-19A								
2. Light corrosion under nose cap at fwd and aft ends.								
Preliminary PFAR(s)? ☐ Yes ☒ No					Preliminary PFAR Number(s): _____			
Clarification Form(s)? ☒ Yes ☐ No					Clarification Form Page No.(s): C-19A			

POSTFLIGHT OBSERVATION RECORD (PFOR) C-12
Nozzle Subassembly Phenolic Bondline Condition

Motor No.: 360T025	Side: RIGHT LEFT (A)	Date: 19-AUG-92
Assessment Engineer(s)/Inspector(s): M. Clark, P. Miller		
Phenolic Subassembly: Cowl Assembly		

Record Primary Bondline/Phenolic Failure Mode Percentage (After Hydrolase and Wedge Removal):

	Degree Location							
	0-90	90-180	180-270	270-360				
Metal-to-Adhesive	100	100	100	100				
Within Adhesive								
Adhesive-to-SCP								
Within SCP								
SCP-to-CCP								
Within CCP								

Record Secondary Bondline Failure Mode Percentage (After Removal of Remaining Phenolics):

	Degree Location							
Metal-to-Adhesive								
Within Adhesive								
Adhesive-to-SCP								

Phenolic Removal Method: _____

Metal Housing Bondline Surface Observations:

	Yes	No	Comment #
A. Soot?	☒	☒	1
B. Voids in Adhesive?	☒	☐	2
C. Corrosion?	☒	☒	
D. Foreign Material?	☐	☒	

Notes / Comments	1. Deg Loc	distance From Fwd end	AXIAL Length	CIRCUMFERENTIAL Length
to be	60	0"	2.6"	.6"
	120	0"	2.5"	.4"
	170	0"	2.6"	.2"
	210	.9"	1.7"	.3"
	290	.4"	1.9"	.2"

2. Medium corrosion seen on housing

Preliminary PFAR(s)? ☐ Yes ☒ No Preliminary PFAR Number(s): _____

Clarification Form(s)? ☐ Yes ☒ No Clarification Form Page No.(s): _____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-12
Nozzle Subassembly Phenolic Bondline Condition

Motor No.: 360T025	Side: Left (A)	Date: 8-24-92 & 8-25-92
Assessment Engineer(s)/Inspector(s): L.E. WILKES / P. MILLER / T. FRESTON		
Phenolic Subassembly: Fixed Housing Assembly		

Record Primary Bondline/Phenolic Failure Mode Percentage (After Hydrolase and Wedge Removal):

	Degree Location							
	0-360							
Metal-to-Adhesive								
Within Adhesive								
Adhesive-to-GCP								
Within GCP	35							
GCP-to-CCP	65							
Within CCP								

Record Secondary Bondline Failure Mode Percentage (After Removal of Remaining Phenolics):

	Degree Location							
	0-360							
Metal-to-Adhesive								
Within Adhesive								
Adhesive-to-GCP	100							

Phenolic Removal Method: WEDGE & PEEL.

Metal Housing Bondline Surface Observations:

	Yes	No	Comment #
A. Soot?	☒	☒	
B. Voids in Adhesive?	☒	☐	1
C. Corrosion?	☐	☒	
D. Foreign Material?	☐	☒	

Notes / Comments ① SEE PFOR CLARIFICATION PAGE C-21A.

Special Issues 3.3.2 A VISIBLE RESIN RICH BAND WAS OBSERVED AT 0.40 AFT OF WIPER O-RING GROOVE AT 43°-46° AND AT 0.30 AFT OF GROOVE AT 330°-345°.

Preliminary PFAR(s)? Yes ✓ No Preliminary PFAR Number(s):

Clarification Form(s)? ✓ Yes No Clarification Form Page No.(s): C-21A

Nozzle Subassembly Bondline Adhesive Void Clarification Form

Motor No.: 360T025	Side: ☒ Left (A) ☐ Right (B)	Date: 8-25-92
Assessment Engineer(s)/Inspector(s): L.E. WILKES / T. FRESTON		
Nozzle Subassembly: FIXED HOUSING		

Record Bondline Adhesive Void Measurements and Locations Below:

Degree Location	Void Size		Location on Bonding Surface	
	Axial	Circ.	Distance From Fwd	Distance From Aft
24°	1.07	.47		1.30
42°	.66	.20		.95
47°	.60	.50		1.66
86°	.70	.43		2.85
149°	.62	.33		13.5
259°	1.19	.40		3.87
260°	.61	.27		4.66
271°	.85	.50		2.10

Notes / Comments ① INTERMITTENT SMALL VOIDS, 0.50 IN. MAX DIAMETER, WERE OBSERVED AROUND FULL CIRCUMFERENCE & LENGTH INFREQUENTLY.

Corresponding Comment Number(s): (1)

POSTFLIGHT OBSERVATION RECORD (PFOR) C-13
Cowl Ring Phenolic (CCP) Section Condition

Motor No.: 360T025	Side: Left (A)	Date: 12/2/92
Assessment Engineer(s)/Inspector(s): T. WALKER		

Cowl Phenolic Section Observations:

- A. Cross-ply cracking in virgin material?
B. Ply lifting?

Yes No Comment #

A. Cross-ply cracking in virgin material?	No	Comment #
B. Ply lifting?	No	

Record the Cowl Char and Erosion Measurements Below:

Station	0°		90°		180°		270°	
Location	Erosion	Char *	Erosion	Char *	Erosion	Char	Erosion	Char
0.3		.83*		.87*	.22	.53	.23	.48
1.0	.26	.53	.27	.58	.26	.54	.29	.50
2.0	.23	.64	.30	.64	.32	.56	.29	.61
3.0	.26	.69	.31	.62	.29	.55	.36	.56
4.0	.23	.62	.28	.62	.26	.62	.33	.60
5.0	.36	.61	.27	.64	.22	.63	.26	.69
6.0	.31	.68	—	1.00*	.24	.72	.23	.70
6.8	—	.98*	—	1.05*	.24	.84	N/A	

Negative Margin of Safety? Yes No Station: Degree:

Notes / Comments * TOTAL HEAT AFFECTED DENTIN (CHAR + EROSION)

Preliminary PFAR(s)? Yes No Preliminary PFAR Number(s):
Clarification Form(s)? Yes No Clarification Form Page No.(s):

POSTFLIGHT OBSERVATION RECORD (PFOR) C-14
Forward Exit Cone Phenolic (CCP) Section Condition

Motor No.: 360T025	Side: Left (A)	Date: 12/10/92
--------------------	----------------	----------------

Assessment Engineer(s)/Inspector(s): T. WALKER

Forward Exit Cone Phenolic Section Observations:

Yes	No	Comment #
<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>

- A. Cross-ply cracking in virgin material?
B. Ply lifting?

Record the Forward Exit Cone Char and Erosion Measurements Below:

Station Location	0°		90°		180°		270°	
	Erosion	Char	Erosion	Char	Erosion	Char	Erosion	Char
1.0	<u>.32</u>	<u>.73</u>	<u>.40</u>	<u>.72</u>	<u>.29</u>	<u>.77</u>	<u>.39</u>	<u>.71</u>
4.0	<u>N/A</u>	<u> </u>	<u>N/A</u>	<u> </u>	<u>N/A</u>	<u> </u>	<u>.40</u>	<u>.68</u>
4.6	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u>.39</u>	<u>.70</u>
8.0	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u>N/A</u>	<u> </u>
12.0	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
16.0	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
20.0	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
24.0	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
28.0	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
32.0	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
32.9	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
34.0	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

Negative Margin of Safety? Yes No Station: Degree:

Notes / Comments

Preliminary PFAR(s)? Yes No Preliminary PFAR Number(s):

Clarification Form(s)? Yes No Clarification Form Page No.(s):

POSTFLIGHT OBSERVATION RECORD (PFOR) C-15
Fixed Housing Phenolic (CCP) Section Condition

Motor No.: 360T025	Side: Left (A)	Date: 12/10/02
--------------------	----------------	----------------

Assessment Engineer(s)/Inspector(s): J. W. [Signature]

Fixed Housing Phenolic Section Observations:

- A. Cross-ply cracking in virgin material?
B. Ply lifting?

Yes No Comment #

A. Cross-ply cracking in virgin material?	Yes	No	
B. Ply lifting?	Yes	No	

Record the Fixed Housing Char and Erosion Measurements Below:

Station	0°		90°		180°		270°	
Location	Erosion	Char	Erosion	Char	Erosion	Char	Erosion	Char
0.0	.07	1.11	0	1.05	.02	1.22	.01	1.15
1.0	.04	.98	0	.95	0	1.01	0	1.14
2.0	0	.94	0	.89	0	1.06	0	1.04
3.0	0	.89	0	.92	0	1.07	0	1.01
4.0	0	.92	0	.92	0	1.10	0	1.03
5.0	0	.91	0	.89	0	1.14	0	1.02
6.0	0	.86	0	.91	0	1.09	0	.96
7.0	0	.90	0	.92	0	1.10	0	1.01
8.0	0	.82	0	.84	N/A		0	.92
9.0	0	.74	0	.73			0	.77
10.75	N/A		-	1.89*			-	1.75*

Negative Margin of Safety? Yes ☒ No ☐ Station: _____ Degree: _____

Notes / Comments: * TOTAL NEW INSPECTED DATA (111 - 511000)

Preliminary PFAR(s)? Yes ☒ No ☐ Preliminary PFAR Number(s): _____

Clarification Form(s)? Yes ☒ No ☐ Clarification Form Page No.(s): _____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-16
Throat Inlet Assembly Phenolic (CCP) Section Condition

Motor No.: 360T025	Side: Left (A)	Date: 12/10/92
--------------------	----------------	----------------

Assessment Engineer(s)/Inspector(s): J. H. HARRIS

Throat Inlet Assembly Phenolic Section Observations:

	Yes	No	Comment #
A. Cross-ply cracking in virgin material?	<u> </u>	<u> / </u>	<u> </u>
B. Ply lifting?	<u> </u>	<u> / </u>	<u> </u>

Record the Throat Inlet Ring and Throat Ring Char and Erosion Measurements Below:

Station Location	0°		90°		180°		270°	
	Erosion	Char	Erosion	Char	Erosion	Char	Erosion	Char
1.0	<u>1.06</u>	<u>.44</u>	<u>1.00</u>	<u>.50</u>	<u>.99</u>	<u>.61</u>	<u>1.05</u>	<u>.58</u>
2.0	<u>1.07</u>	<u>.55</u>	<u>1.03</u>	<u>.55</u>	<u>1.02</u>	<u>.55</u>	<u>1.05</u>	<u>.55</u>
4.0	<u>1.13</u>	<u>.63</u>	<u>1.07</u>	<u>.61</u>	<u>1.06</u>	<u>.58</u>	<u>1.10</u>	<u>.58</u>
6.0	<u>1.19</u>	<u>.58</u>	<u>1.13</u>	<u>.59</u>	<u>1.13</u>	<u>.54</u>	<u>1.16</u>	<u>.57</u>
8.0	<u>1.24</u>	<u>.42</u>	<u>1.19</u>	<u>.54</u>	<u>1.14</u>	<u>.53</u>	<u>1.20</u>	<u>.52</u>
10.0	<u>1.18</u>	<u>.44</u>	<u>1.17</u>	<u>.53</u>	<u>1.10</u>	<u>.45</u>	<u>1.16</u>	<u>.47</u>
12.0	<u>1.15</u>	<u>.47</u>	<u>1.14</u>	<u>.48</u>	<u>1.10</u>	<u>.43</u>	<u>1.12</u>	<u>.48</u>
14.0	<u>1.12</u>	<u>.49</u>	<u>1.10</u>	<u>.53</u>	<u>1.09</u>	<u>.53</u>	<u>1.11</u>	<u>.52</u>
16.0	<u>1.07</u>	<u>.50</u>	<u>1.08</u>	<u>.57</u>	<u>1.06</u>	<u>.56</u>	<u>1.08</u>	<u>.56</u>
18.0	<u>1.10</u>	<u>.57</u>	<u>.88</u>	<u>.65</u>	<u>.91</u>	<u>.58</u>	<u>.95</u>	<u>.60</u>
20.0	<u>.65</u>	<u>.64</u>	<u>.67</u>	<u>.69</u>	<u>.70</u>	<u>.63</u>	<u>.73</u>	<u>.64</u>
22.0	<u>.40</u>	<u>.75</u>	<u>.44</u>	<u>.79</u>	<u>.44</u>	<u>.78</u>	<u>.50</u>	<u>.72</u>
23.0	<u>.36</u>	<u>.79</u>	<u>.36</u>	<u>.85</u>	<u>.37</u>	<u>.78</u>	<u>.44</u>	<u>.76</u>

Negative Margin of Safety? Yes / No Station: Degree:

Notes / Comments

Preliminary PFAR(s)? Yes / No Preliminary PFAR Number(s):

Clarification Form(s)? Yes / No Clarification Form Page No.(s):

POSTFLIGHT OBSERVATION RECORD (PFOR) C-17
Nose Cap Phenolic (CCP) Section Condition

Motor No.: 360T025 Side: Left (A) Date: 12/10/72

Assessment Engineer(s)/Inspector(s):

L. WALKER

Nose Cap Phenolic Section Observations:

Yes

No

Comment #

A. Cross-ply cracking in virgin material?

 /

B. Ply lifting?

 /

Record the Nose Cap Char and Erosion Measurements Below:

Station	0°		90°		180°		270°	
Location	Erosion	Char *	Erosion	Char *	Erosion	Char *	Erosion	Char *
1.5	<u>—</u>	<u>.79 *</u>	<u>—</u>	<u>.81 *</u>	<u>—</u>	<u>.83 *</u>	<u>—</u>	<u>.89 *</u>
4.0	<u>.32</u>	<u>.55</u>	<u>.35</u>	<u>.54</u>	<u>.27</u>	<u>.59</u>	<u>.32</u>	<u>.67</u>
6.0	<u>.39</u>	<u>.57</u>	<u>.33</u>	<u>.56</u>	<u>.31</u>	<u>.59</u>	<u>.38</u>	<u>.59</u>
8.0	<u>.48</u>	<u>.54</u>	<u>.39</u>	<u>.52</u>	<u>.36</u>	<u>.56</u>	<u>.46</u>	<u>.49</u>
10.0	<u>.48</u>	<u>.54</u>	<u>.43</u>	<u>.50</u>	<u>.38</u>	<u>.60</u>	<u>.52</u>	<u>.53</u>
12.0	<u>.56</u>	<u>.42</u>	<u>.45</u>	<u>.45</u>	<u>.43</u>	<u>.48</u>	<u>.55</u>	<u>.43</u>
14.0	<u>.52</u>	<u>.54</u>	<u>.50</u>	<u>.48</u>	<u>.43</u>	<u>.47</u>	<u>.58</u>	<u>.48</u>
16.0	<u>.79</u>	<u>.46</u>	<u>.58</u>	<u>.46</u>	<u>.58</u>	<u>.45</u>	<u>.71</u>	<u>.40</u>
18.0	<u>.89</u>	<u>.43</u>	<u>.66</u>	<u>.46</u>	<u>.60</u>	<u>.44</u>	<u>.78</u>	<u>.34</u>
20.0	<u>1.05</u>	<u>.43</u>	<u>.84</u>	<u>.41</u>	<u>.79</u>	<u>.37</u>	<u>.96</u>	<u>.37</u>
22.0	<u>1.75</u>	<u>.76</u>	<u>1.34</u>	<u>.58</u>	<u>1.24</u>	<u>.65</u>	<u>1.50</u>	<u>.55</u>
24.0	<u>1.75</u>	<u>.74</u>	<u>1.54</u>	<u>.63</u>	<u>1.51</u>	<u>.63</u>	<u>1.67</u>	<u>.65</u>
26.0	<u>1.45</u>	<u>.82</u>	<u>1.06</u>	<u>.67</u>	<u>1.05</u>	<u>.68</u>	<u>1.17</u>	<u>.63</u>

Negative Margin of Safety?

Yes

No

Station:

Degree:

Notes / Comments

* TOTAL NET-AFFECTED DEPTH (CHAR + EROSION)

Preliminary PFAR(s)?

Yes

No

Preliminary PFAR Number(s):

Clarification Form(s)?

Yes

No

Clarification Form Page No.(s):

POSTFLIGHT OBSERVATION RECORD (PFOR) C-18
Forward Nose Ring and Aft Inlet Ring Phenolic (CCP) Section Condition

Motor No.: 360T025	Side: Left (A)	Date: 12/10/92
Assessment Engineer(s)/Inspector(s): J. Walker		

Forward Nose and Aft Inlet Ring Phenolic Section Observations:	Yes	No	Comment #
A. Cross-ply cracking in virgin material?	☐	☒	
B. Ply lifting?	☐	☒	

Record the Forward Nose Ring (-503) Char and Erosion Measurements Below:

Station	0°		90°		180°		270°	
Location	Erosion	Char	Erosion	Char	Erosion	Char	Erosion	Char
28.0	.15	.61	.105	.71	.97	.65	1.04	.73
30.0	.85	.68	.82	.68	.77	.68	.86	.67
32.0	.86	.54	.90	.63	.85	.57	.92	.58

Negative Margin of Safety? ☐ Yes ☒ No Station: _____ Degree: _____

Record the Aft Inlet Ring Char (-504) and Erosion Measurements Below:

Station	0°		90°		180°		270°	
Location	Erosion	Char	Erosion	Char	Erosion	Char	Erosion	Char
34.0	.81	.43	.85	.49	.79	.49	.88	.47
36.0	.92	.49	.90	.52	.84	.51	.89	.53
38.0	.93	.52	.99	.57	.91	.55	.99	.53
39.0	.99	.60	1.02	.60	.92	.50	.99	.59

Negative Margin of Safety? ☐ Yes ☒ No Station: _____ Degree: _____

Notes / Comments

Preliminary PFAR(s)? ☐ Yes ☒ No Preliminary PFAR Number(s): _____

Clarification Form(s)? ☐ Yes ☒ No Clarification Form Page No.(s): _____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-1
Nozzle Assembly Quick-look Condition

Motor No.: 360T025	Side: Right (B)	Date: 8-13-92																
Assessment Engineer(s)/Inspector(s): M. Clark																		
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:60%;">Nozzle Assembly Quick-look Observations:</th> <th style="width:10%;">Yes</th> <th style="width:10%;">No</th> <th style="width:20%;">Comment #</th> </tr> </thead> <tbody> <tr> <td>A. Metal Damage Due to Transportation or Handling?</td> <td style="text-align: center;">✓</td> <td></td> <td style="text-align: center;">2</td> </tr> <tr> <td>B. Phenolic Damage Due to Transportation or Handling?</td> <td></td> <td style="text-align: center;">✓</td> <td></td> </tr> <tr> <td>C. Foreign Material?</td> <td></td> <td style="text-align: center;">✓</td> <td></td> </tr> </tbody> </table>			Nozzle Assembly Quick-look Observations:	Yes	No	Comment #	A. Metal Damage Due to Transportation or Handling?	✓		2	B. Phenolic Damage Due to Transportation or Handling?		✓		C. Foreign Material?		✓	
Nozzle Assembly Quick-look Observations:	Yes	No	Comment #															
A. Metal Damage Due to Transportation or Handling?	✓		2															
B. Phenolic Damage Due to Transportation or Handling?		✓																
C. Foreign Material?		✓																
Notes / Comments 1) The nozzle has shifted approx 8" toward the nozzle aft end in cradle. Truck drivers did not find the condition until the tarps were removed in building H-6. The drivers did say that the flatbed was leaning to the same side that the nozzle had shifted when they left a weigh station in Colorado. This condition is still visible at H-6. 2) Two light scratches ^{on OD} and displaced metal at ^{275° on} forward end of fixed housing flange. Raised metal can be felt. Scratches measures: 0.25" axial x width and depth cannot be measured (approx. 5 mils or less) 240° from forward end and are 0.050" apart circ. Displaced metal measures: 0.05" axial by 0.83" circ. The 275° location is where the nozzle contacted the truck bed. A preliminary PFAR has been written. 3) Paint rubbed off the fixed housing aft flange (C.D.) due to the nozzle shifting at 240° to 310° intermittently.																		
Preliminary PFAR(s)? ☒ Yes ☐ No Preliminary PFAR Number(s): 46C-01																		

Clarification Form(s)? ☐ Yes ☒ No Clarification Form Page No. (s):

POSTFLIGHT OBSERVATION RECORD (PFOR) C-2
Internal Nozzle Joint Condition

Motor No.: 360T025	Side: Right (B)	Date: 8-18-92
Assessment Engineer(s)/Inspector(s): R. Quick, R. Tellers, M. Clark, P. Miller		
Joint: Nose Inlet-to-Flex Bearing-to-Cowl (Joint #2)		

Internal Nozzle Joint Observations:	Yes	No	Comment #
A. Gas Penetration in the RTV (Terminated, Through)?	☒	☐	(2)
B. RTV Not Below Char Line?	☐	☒	
C. RTV To the Primary O-ring?	☐	☐	
D. RTV Past the Primary O-ring?	☐	☐	
E. Uncured RTV?	☐	☒	
F. Voids Within RTV?	☐	☒	
G. Foreign Material?	☐	☒	
H. Heat Affected or Eroded Virgin CCP, GCP/SCP, or adhesive?	☐	☒	
I. Damaged Phenolics?	☐	☒	
J. Bondline Edge Separations? Use Clarification Form.	☐	☒	
K. Phenolics Axially Displaced From Housing?	☐	☒	
L. Heat Affected Metal?	☐	☒	
M. Unbonded or Blistered Paint?	☐	☒	
N. Corrosion?	☒	☐	1
O. Excessive Grease in Threaded Bolt Holes?	☐	☒	
P. Bolt Hole Damage (Through, Threaded/Helical Coil Insert)?	☐	☒	
Q. Bent or Broken Bolts?	☐	☒	
R. Metal Damage (Joints or Housings)?	☐	☒	

Notes / Comments

1) Corrosion present and noted on page C-29.

(2) TERMINATED GAS PATH within RTV AT 320° AS NOTED ON PAGE C-29.

Preliminary PFAR(s)? ☐ Yes ☒ No Preliminary PFAR Number(s): _____

Clarification Form(s)? ☐ Yes ☒ No Clarification Form Page No.(s): _____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-3
Nose Inlet-to-Flex Bearing-to-Cowl Joint (Joint #2) Condition Drawing Worksheet

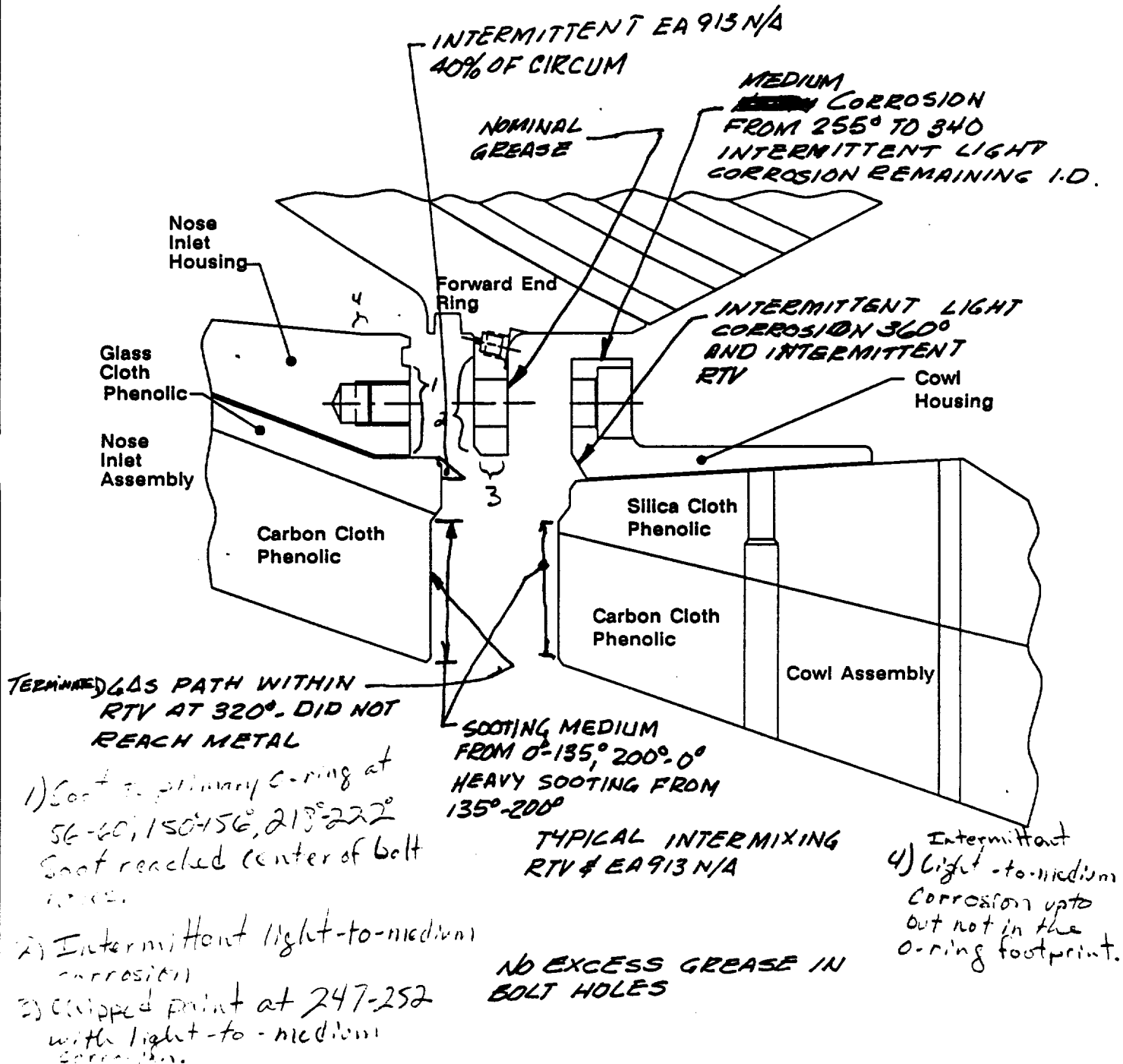
Motor No.: 360T025

Side: Right (B)

Date: 8/18/92

Assessment Engineer(s)/Inspector(s): R. QUICK, R. TELLERS, M. CLARK

Sketch Observations Below (include locations and sizes of sketched features):



Clarification Form(s)? ☐ Yes ☒ No

Clarification Form Page No. (s): _____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-2
Internal Nozzle Joint Condition

Motor No.: 360T025	Side: Right (B)	Date: 8-18-92
Assessment Engineer(s)/Inspector(s): M. Clark, P. Miller, K. Stuppe		
Joint: Nose Inlet-to-Throat (Joint #3)		

Internal Nozzle Joint Observations:	Yes	No	Comment #
A. Gas Penetration in the RTV (Terminated, Through)?	☒	☐	2
B. RTV Not Below Char Line?	☒	☐	2
C. RTV To the Primary O-ring?	☐	☒	
D. RTV Past the Primary O-ring?	☐	☒	
E. Uncured RTV?	☒	☐	3
F. Voids Within RTV?	☐	☒	
G. Grease Inhibiting RTV Backfill?	☐	☒	
H. Foreign Material?	☐	☒	
I. Heat Affected or Eroded Virgin CCP, GCP/SCP, or adhesive?	☒	☐	2
J. Damaged Phenolics?	☐	☒	
K. Bondline Edge Separations? Use Clarification Form.	☒	☐	4
L. Phenolics Axially Displaced From Housing?	☐	☒	
M. Heat Affected Metal?	☐	☒	
N. Unbonded or Blistered Paint?	☐	☒	
O. Corrosion?	☒	☐	1
P. Alignment Pin Damage?	☐	☒	
Q. Excessive Grease in Threaded Bolt Holes?	☐	☒	
R. Bolt Hole Damage (Through, Threaded/Helical Coil Insert)?	☐	☒	
S. Bent or Broken Bolts?	☐	☒	
T. Metal Damage (Joints or Housings)?	☐	☒	

Notes / Comments
 1) Special Issues 3.2.3.2 Light-to-medium corrosion observed on inboard edge of throat forward end. No other metal damage.
 2) RTV not below the char-line and associated heat affected CCP and root to primary o-ring is documented on C-32. Preliminary PFARs 46C-05, -06 & -07 have been written.
 3) Uncured RTV observed in joint. Reference C-32.
 4) Separations documented on C-31A.

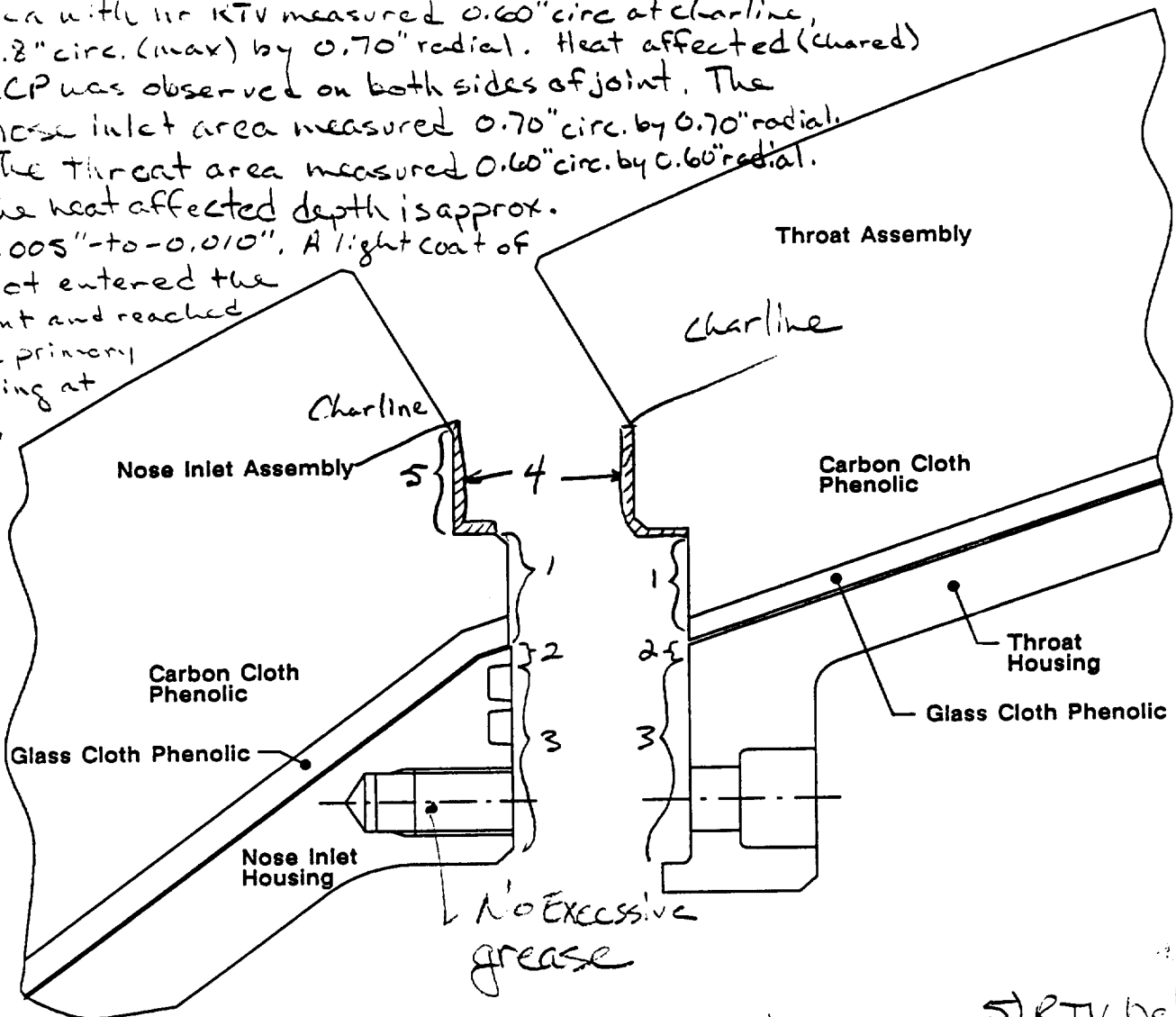
Preliminary PFAR(s)? ☒ Yes ☐ No	Preliminary PFAR Number(s): 46C-05, -06, -07
Clarification Form(s)? ☒ Yes ☐ No	Clarification Form Page No.(s): C-31A

POSTFLIGHT OBSERVATION RECORD (PFOR) C-4
Nose Inlet-to-Throat Joint (Joint #3) Condition Drawing Worksheet

Motor No.: 360T025	Side: Right (B)	Date: 8-18-92
Assessment Engineer(s)/Inspector(s): M. Clark, P. Miller, K. Stupe		

Sketch Observations Below (include locations and sizes of sketched features):

5) RTV was not below the charline at 211°. The area with the RTV measured 0.60" circ at charline, 3.8" circ. (max) by 0.70" radial. Heat affected (chared) CCP was observed on both sides of joint. The nose inlet area measured 0.70" circ. by 0.70" radial. The throat area measured 0.60" circ. by 0.60" radial. The heat affected depth is approx. 0.005"-to-0.010". A light coat of soot entered the joint and reached the primary carring at 211°.



1) Uncured RTV at 48°-70°, 100°-114°, 141°-162°

2) Light - to - medium corrosion intermittent around circumference

3) Nominal grease coverage with no corrosion

5) RTV below char line except as defined in note 5.

Clarification Form(s)? ☐ Yes ☒ No

Clarification Form Page No. (s): _____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-2
Internal Nozzle Joint Condition

Motor No.: 360T025	Side: Right (B)	Date: 8-14-92
Assessment Engineer(s)/Inspector(s): M. Clark, P. Miller, B. Selby, M. Spivey, E. Moser		
Joint: Throat-to-Forward Exit Cone (Joint #4)		

Internal Nozzle Joint Observations:	Yes	No	Comment #
A. Gas Penetration in the RTV (Terminated, Through)?		✓	
B. RTV Not Below Char Line?		✓	
C. RTV To the Primary O-ring?		✓	
D. RTV Past the Primary O-ring?		✓	
E. Uncured RTV?		✓	
F. Voids Within RTV?		✓	
G. Grease Inhibiting RTV Backfill?		✓	
H. Foreign Material?		✓	
I. Heat Affected or Eroded Virgin CCP, GCP/SCP, or adhesive?		✓	
J. Damaged Phenolics?		✓	
K. Bondline Edge Separations? Use Clarification Form.	✓		2
L. Phenolics Axially Displaced From Housing?		✓	
M. Heat Affected Metal?		✓	
N. Unbonded or Blistered Paint?		✓	
O. Corrosion?	✓		1
P. Alignment Pin Damage?		✓	
Q. Excessive Grease in Threaded Bolt Holes?		✓	
R. Bolt Hole Damage (Through, Threaded/Helical Coil Insert)?		✓	
S. Bent or Broken Bolts?		✓	
T. Metal Damage (Joints or Housings)?		✓	

Notes / Comments

- 1) Special Issues 3.2.3.2 Light - to - medium corrosion on inboard edge of throat aft surface with intermittent heavy corrosion at 162° - 200°. medium - to - heavy corrosion on out-board edge of throat aft surface. Preliminary PFAIR written by joints and seals
- 2) Bondline separations documented on C-33A & C-33B

Preliminary PFAIR(s)? ☒ Yes ☐ No Preliminary PFAIR Number(s): 46C-02

Clarification Form(s)? ☒ Yes ☐ No Clarification Form Page No.(s): C-33A & C-33B

Corresponding Comment Number(s): (2)

POSTFLIGHT OBSERVATION RECORD (PFOR) C-5
Throat-to-Forward Exit Cone Joint (Joint #4) Condition Drawing Worksheet

Motor No.: 360T025

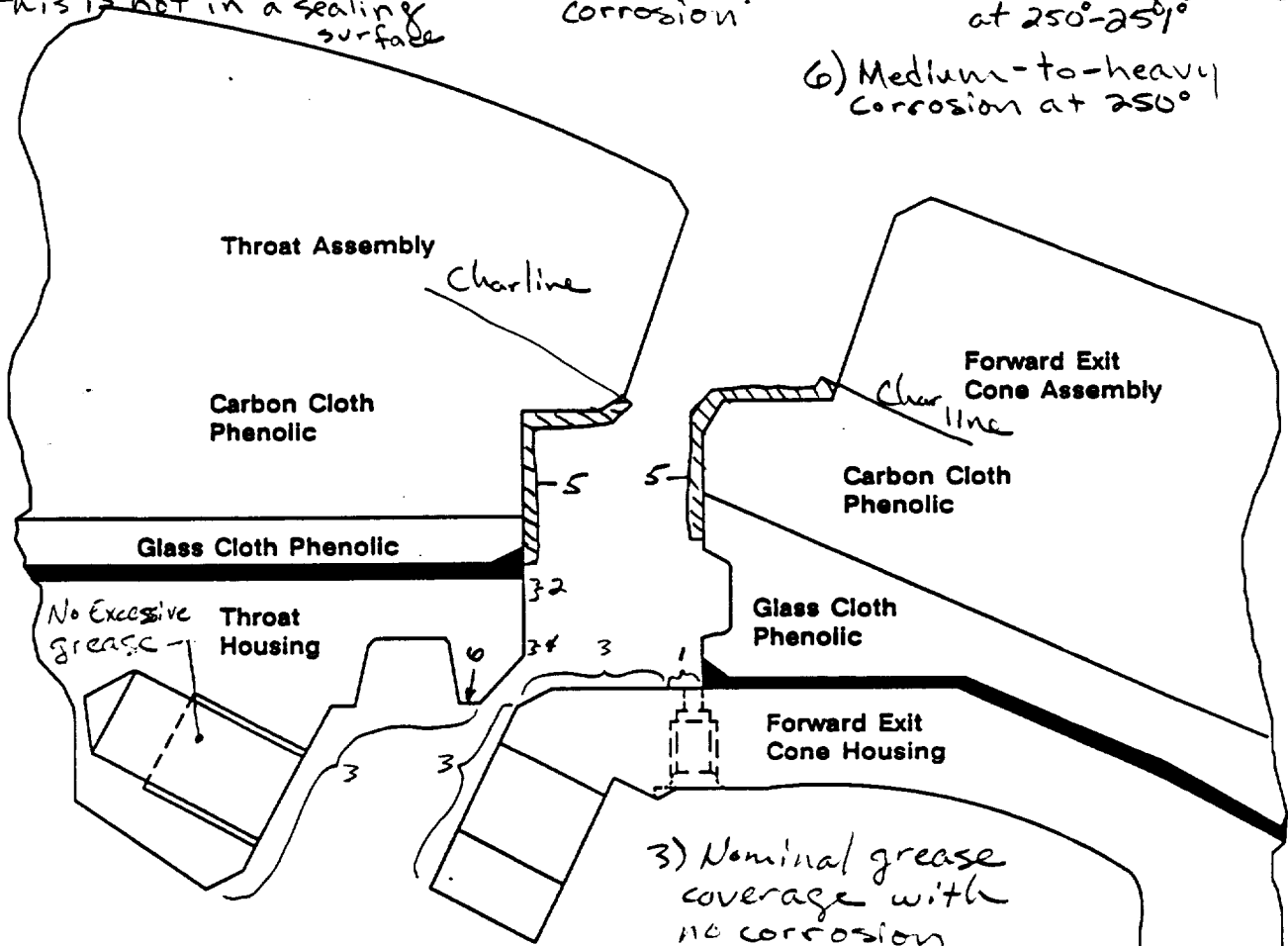
Side: Right (B)

Date: 8-14-92

Assessment Engineer(s)/Inspector(s): M. Clark, P. Miller, B. Selby, M. Lyons, E. Hanks

Sketch Observations Below (include locations and sizes of sketched features):

- 1) Light corrosion except at 230-255 where there was medium-to-heavy. This is not in a sealing surface
- 2) Light-to-Medium with intermittent heavy at 162-200° corrosion
- 4) medium-to-heavy corrosion with the deepest pit of 0.002" in a sealing surface at 250-251°
- 6) Medium-to-heavy corrosion at 250°



Clarification Form(s)? ☐ Yes ☒ No

Clarification Form Page No.(s): _____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-2
Internal Nozzle Joint Condition

Motor No.: 360T025	Side: Right (B)	Date: 8-17-92
Assessment Engineer(s)/Inspector(s): <i>B. Quick, R. Lange</i>		
Joint: Aft End Ring-to-Fixed Housing (Joint #5)		

Internal Nozzle Joint Observations:

	Yes	No	Comment #
A. Gas Penetration in the RTV (Terminated, Through)?	☐	☒	
B. RTV Not Below Char Line?	☐	☒	
C. RTV To the Primary O-ring?	☒	☐	1
D. RTV Past the Primary O-ring?	☐	☒	
E. Uncured RTV?	☐	☒	
F. Voids Within RTV?	☒	☐	2
G. Foreign Material?	☐	☒	
H. Heat Affected or Eroded Virgin CCP, GCP/SCP, or adhesive?	☐	☒	
I. Damaged Phenolics?	☐	☒	
J. Bondline Edge Separations? Use Clarification Form.	☐	☒	
K. Phenolics Axially Displaced From Housing?	☐	☒	
L. Heat Affected Metal?	☐	☒	
M. Unbonded or Blistered Paint?	☐	☒	
N. Corrosion?	☒	☐	3, 4
O. Alignment Pin Damage?	☐	☒	
P. Excessive Grease in Threaded Bolt Holes?	☐	☒	
Q. Bolt Hole Damage (Through, Threaded/Helical Coil Insert)?	☐	☒	
R. Bent or Broken Bolts?	☐	☒	
S. Metal Damage (Joints or Housings)?	☐	☒	

Notes / Comments 1. RTV TO PRIMARY O-RING FROM 150°-220° AND 550°-355°
2. INTERMITTENT VOIDS 360° LARGEST VOID 65°-70° CIRC 1.5 AXIAL
1.33 X .04 DEEP
3. MEDIUM CORROSION ON FIXED HOUSING SECONDARY O-RING AREA
4. MEDIUM TO HEAVY CORROSION FROM 160 THRU TO 160° ON
TIP OF AFT END RING

* MINOR SNUBBER SCUFFING

Preliminary PFAR(s)? ☐ Yes ☒ No Preliminary PFAR Number(s): _____
Clarification Form(s)? ☐ Yes ☒ No Clarification Form Page No.(s): _____

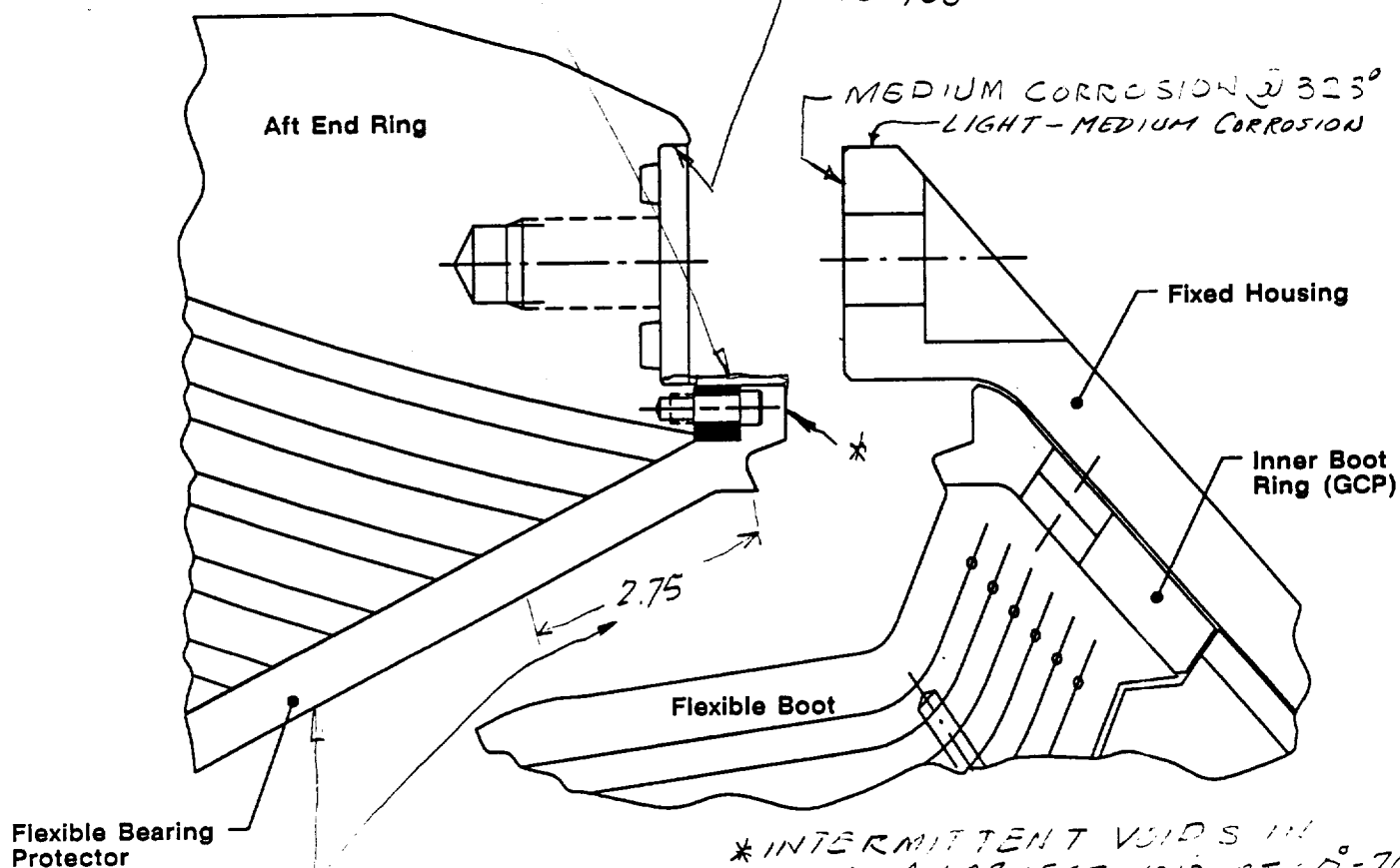
POSTFLIGHT OBSERVATION RECORD (PFOR) C-6
Aft End Ring-to-Fixed Housing Joint (Joint #5) Condition Drawing Worksheet

Motor No.: 360T025	Side: Right (B)	Date: 3/17/92
Assessment Engineer(s)/Inspector(s): R. QUICK, R. LANGE, M. Clark		

Sketch Observations Below (include locations and sizes of sketched features):

150°-222° RTV TO PRIMARY O-RING
330°-355° RTV TO PRIMARY O-RING

RTV TO RADIUS ON AFT
END RING 350-0-8, 150-350
MEDIUM TO HEAVY
CORROSION FROM 160-THRU 0°
TO 100°



TYPICAL SOOTING
360° SLAG WITNESS
MARK AT 165° Reference
PAGE C-38A.

Clarification Form(s)? ☒ Yes ☐ No Clarification Form Page No.(s): C-38A

POSTFLIGHT OBSERVATION RECORD (PFOR) C-7
Cowl Insulation Segment Condition

Motor No.: 360T025	Side: Right (B)	Date: 8/18/92
Assessment Engineer(s)/Inspector(s): <i>R. QUICK R. TELLERS</i>		
Cowl Insulation Segment Observations:	Yes	No
A. Spring Pin Holes Completely Through the Cowl Segment?	_____	☒
B. Abnormal Heat Effects or Erosion?	_____	☒
C. Soot Between the Cowl Segment and Cowl Housing?	_____	☒
D. Bondline Failure Mode? Data Collection Only.	N/A	N/A

Notes / Comments

1) Bondline Failure

*10% adhesive to metal
5% within the rubber
85% adhesive to rubber*

Preliminary PFAR(s)? _____ Yes ☒ No _____ Preliminary PFAR Number(s): _____
Clarification Form(s)? _____ Yes ☒ No _____ Clarification Form Page No.(s): _____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-8
Flexible Bearing, Flexible Bearing Protector, and Flexible Boot Condition

Motor No.: 360T025	Side: Right (B)	Date: 8-17-92	
Assessment Engineer(s)/Inspector(s): M. Clark, L. Wilkes, T. Freston			
<u>Flexible Bearing, Bearing Protector, and Boot Observations:</u> A. Bearing Protector Burn-Through? B. Cracks Through the Bearing Protector? C. Bearing Protector Heat Effects or Erosion Other Than at Cowl Vent Hole Locations? D. Soot Between the Bearing Protector and Flexible Bearing? E. Heat Effects to the Flexible Bearing? F. Bent or Broken Bearing Protector Bolts? G. Flexible Boot Burn-Through? H. Abnormal Heat Effects or Erosion to Flexible Boot ID? I. Foreign Material in Boot Cavity?	Yes 	No 	Comment #

Notes / Comments

1) Special Issues 3.3.4 No broken or bent bolts found.

2) Heat affected areas found on bearing protector other than vent hole locations. Reference C-38A. A preliminary PFAR has been written.

Preliminary PFAR(s)? ☒ Yes ☐ No Preliminary PFAR Number(s): 46C-08

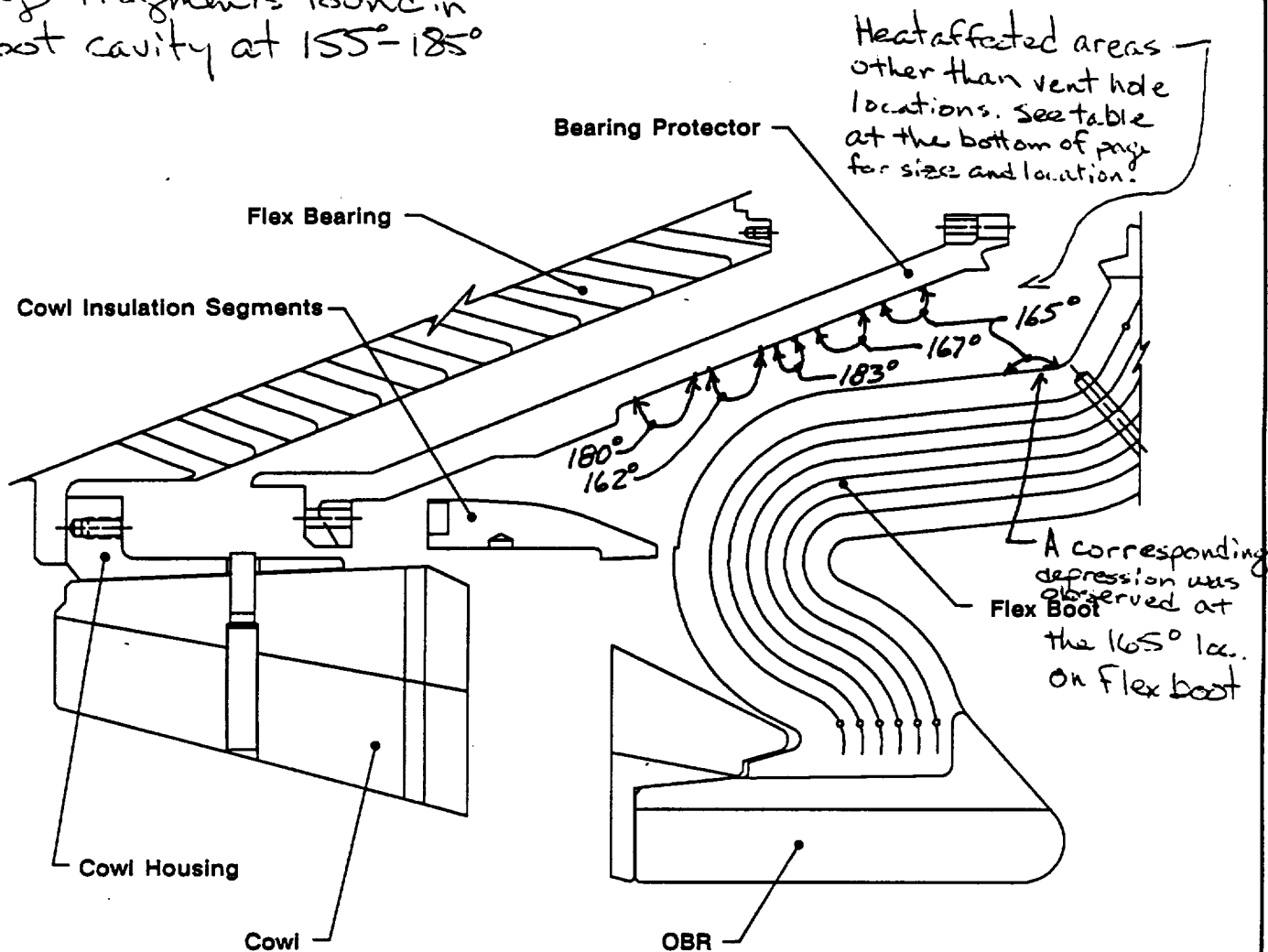
Clarification Form(s)? ☒ Yes ☐ No Clarification Form Page No.(s): C-38A

Flexible Boot Cavity Clarification Form

Motor No.: 360T025	Side: ☒ Right (B)	Date: 8-19-92
Assessment Engineer(s)/Inspector(s): L.E. WILKES / T. FRESTON		
Description: FIVE AREAS OF HEAT AFFECTED FLEX. BRG. PROTECTOR & BOOT.		

Sketch Observations Below (include locations and sizes of sketched features):

Slag fragments found in boot cavity at 155-185°



Angle Loc.	From Aft End	Axial Length	Circ. Width	Radial Depth
162	6.50"	1.60"	4.00"	0.08"
165	2.70"	0.80"	1.40"	0.12"
167	3.30"	0.80"	1.30"	0.03"
180	7.20"	1.20"	1.20"	0.03"
183	4.00"	0.30"	0.40"	0.01"

Corresponding Comment Number(s): (2)

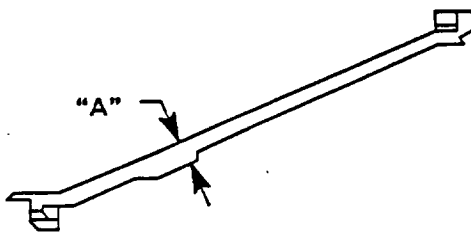
POSTFLIGHT OBSERVATION RECORD (PFOR) C-9
Flexible Bearing Protector Thickness Measurements

Motor No.: 360T025	Side: Right (B)	Date: 8-19-92
--------------------	-----------------	---------------

Assessment Engineer(s)/Inspector(s): R.R. Gallegos

Record the Flexible Bearing Protector Gas Impingement Area Thickness Measurements (see figure) Below:

Degree Location	Thickness Measurement "A" (inches)	Degree Location	Thickness Measurement "A" (inches)	Degree Location	Thickness Measurement "A" (inches)
0	<u>.684"</u>	120	<u>.691"</u>	240	<u>.691"</u>
10	<u>.674"</u>	130	<u>.682"</u>	250	<u>.704"</u>
20	<u>.714"</u>	140	<u>.657"</u>	260	<u>.672"</u>
30	<u>.713"</u>	150	<u>.698"</u>	270	<u>.657"</u>
40	<u>.709"</u>	160	<u>.624"</u>	280	<u>.688"</u>
50	<u>.709"</u>	170	<u>.634"</u>	290	<u>.689"</u>
60	<u>.708"</u>	180	<u>.675"</u>	300	<u>.654"</u>
70	<u>.703"</u>	190	<u>.682"</u>	310	<u>.657"</u>
80	<u>.668"</u>	200	<u>.702"</u>	320	<u>.685"</u>
90	<u>.675"</u>	210	<u>.709"</u>	330	<u>.687"</u>
100	<u>.677"</u>	220	<u>.719"</u>	340	<u>.704"</u>
110	<u>.689"</u>	230	<u>.710"</u>	350	<u>.700"</u>



* "A" is the minimum thickness of the bearing protector in-line with the cowl vent holes. It corresponds to the deepest gas impingement location.

Notes / Comments

Preliminary PFAR(s)? ☐ Yes ☒ No

Preliminary PFAR Number(s): _____

Clarification Form(s)? ☐ Yes ☒ No

Clarification Form Page No.(s): _____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-10
Throat Diameter Measurements (Data Collection Only)

Motor No.: 360T025	Side: Right (B)	Date: 8-18-92
--------------------	-----------------	---------------

Assessment Engineer(s)/Inspector(s): M. Clark, R. Vanbeuzekom, J. Garn

Record the Nozzle Throat Diameter Measurements Below:

Degree Location	Diameter Measurement (inches)
0	<u>55.968"</u>
45	<u>55.989"</u>
90	<u>55.999"</u>
135	<u>56.012"</u>

Notes / Comments

Clarification Form(s)? ☐ Yes ☒ No Clarification Form Page No.(s): _____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-11

Outer Boot Ring Char and Erosion Measurements and Flexible Boot Condition

Motor No.: 360T025	Side: Right (B)	Date: 12/2/82
Assessment Engineer(s)/Inspector(s): J. J. [Signature]		

Flexible Boot/Outer Boot Ring Separation Observations: Yes No ☒ Comment #

A. Heat Effects in Boot/OBR Separation? _____

Record the Outer Boot Ring Char and Erosion Measurements Below:

Station	0°		90°		180°		270°	
Location	Erosion	Char	Erosion	Char	Erosion	Char	Erosion	Char *
8.0	.02	.99	.04	.95	.02	.89	—	.95
9.0	0	.90	.02	.90	0	.86	.04	.85
10.0	0	.90	.03	.84	.02	.78	0	.91
11.3	0	.93	.02	.95	0	.87	0	.92

Negative Margin of Safety? Yes No ☒ Station: Degree: _____

Record the Number of Piles Remaining on the Flexible Boot:

Degree Location	Piles Remaining
0	3.1
90	3.3
180	3.9
270	3.2

Negative Margin of Safety? Yes No ☒ Degree: _____

Notes / Comments * TOTAL HEAT AFFECTED DEPTH (CRACK + EROSION)

Preliminary PFAR(s)? Yes No ☒ Preliminary PFAR Number(s): _____

Clarification Form(s)? Yes No ☒ Clarification Form Page No.(s): _____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-12
Nozzle Subassembly Phenolic Bondline Condition

Motor No.: 360T025	Side: Right (B)	Date: 15/SEPT/92
--------------------	-----------------	------------------

Assessment Engineer(s)/Inspector(s): D. Neisen, P. Miller

Phenolic Subassembly: Aft Exit Cone Assembly

Record Primary Bondline/Phenolic Failure Mode Percentage (After Hydrolase and Wedge Removal):

	Degree Location							
	0-90	90-180	180-270	270-360				
Metal-to-Adhesive	10%	15%	10%	15%				
Within Adhesive								
Adhesive-to-GCP	30%	35%	40%	35%				
Within GCP	60%	50%	50%	50%				
GCP-to-CCP								
Within CCP								

Record Secondary Bondline Failure Mode Percentage (After Removal of Remaining Phenolics):

	Degree Location							
Metal-to-Adhesive								
Within Adhesive								
Adhesive-to-GCP								

NA

Phenolic Removal Method: _____

Metal Housing Bondline Surface Observations:

	Yes	No	Comment #
A. Soot?		✓	
B. Voids in Adhesive?	✓		1
C. Corrosion?		✓	
D. Foreign Material?		✓	
E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)?	✓		2

Notes / Comments

1. Voids Located IN Adhesive. See Entry	Distance From Fwd End	deg Loc	Circum. Length	Axial Length
	25.6"	9	0.7"	1.6"
	25.2"	21	0.8"	2.1"
	19.6"	60	0.7"	.9"
	33.4"	255	0.4"	.8"

2. Many small voids in polysulfide. ~~See~~
Largest voids documented .2" X .1"

3. Area of Damaged Metal on Compliance Ring 0.0 Surface at 198° measures .9" Aft of Top Surface .8" Circumferential Length

Preliminary PFAR(s)? Yes ☒ No Preliminary PFAR Number(s): _____

Clarification Form(s)? Yes ☒ No Clarification Form Page No.(s): _____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-12
Nozzle Subassembly Phenolic Bondline Condition

Motor No.: 360T025	Side: Left (A) Right (B)	Date: 8-17-92
Assessment Engineer(s)/Inspector(s): M. Clark, P. Miller		
Phenolic Subassembly: Forward Exit Cone Assembly		

Record Primary Bondline/Phenolic Failure Mode Percentage (After Hydrolase and Wedge Removal):

	Degree Location							
	315-45	45-135	135-225	225-315				
Metal-to-Adhesive	60	70	80	80				
Within Adhesive	1	1	1					
Adhesive-to-GCP	39	29	19	20				
Within GCP								
GCP-to-CCP								
Within CCP								

Record Secondary Bondline Failure Mode Percentage (After Removal of Remaining Phenolics):

	Degree Location							
Metal-to-Adhesive								
Within Adhesive								
Adhesive-to-GCP								

Phenolic Removal Method: _____

Metal Housing Bondline Surface Observations:

A. Soot?

Yes

No

Comment #

B. Voids in Adhesive?

☒

☒

1

C. Corrosion?

☒

☒

2

D. Foreign Material?

☐

☒

Notes / Comments

- 1) Voids documented on page C-43A
- 2) Medium-to-heavy corrosion in areas of metal-to-adhesive separation.
- 3) Photos identified as left (A).

Preliminary PFAR(s)? ☐ Yes ☒ No Preliminary PFAR Number(s): _____

Clarification Form(s)? ☒ Yes ☐ No Clarification Form Page No.(s): C-43A

Nozzle Subassembly Bondline Adhesive Void Clarification Form

[illegible]

Corresponding Comment Number(s): 1

POSTFLIGHT OBSERVATION RECORD (PFOR) C-12
Nozzle Subassembly Phenolic Bondline Condition

Motor No.: 360T025 Side: Right (B) Date: 8-19-92

Assessment Engineer(s)/Inspector(s): L.E. WILKES / T. FRESTON

Phenolic Subassembly: Throat Assembly

Record Primary Bondline/Phenolic Failure Mode Percentage (After Hydrolase and Wedge Removal):

SEE NOTE 1

	Degree Location							
	22-67	67-112	112-157	157-202	202-247	247-292	292-337	337-22
Metal-to-Adhesive	70	65	55	58	50	50	60	100
Within Adhesive								
Adhesive-to-GCP			10	2	15	15	5	
Within GCP								
GCP-to-CCP	30	35	35	40	35	35	35	
Within CCP								

Record Secondary Bondline Failure Mode Percentage (After Removal of Remaining Phenolics):

	Degree Location							
	22-67	67-112	112-157	157-202	202-247	247-292	292-337	337-22
Metal-to-Adhesive	75	50	50	5	20	5	40	NA
Within Adhesive								
Adhesive-to-GCP	25	50	50	95	80	95	60	

Phenolic Removal Method: NYLON WEDGE (MOSTLY THROAT INLET RING)

Metal Housing Bondline Surface Observations:

	Yes	No	Comment #
A. Soot?	☒	☒	
B. Voids in Adhesive?	☒	☐	2
C. Corrosion?	☒	☐	
D. Foreign Material?	☐	☒	

Notes / Comments ① THE THROAT PHENOLIC RINGS WERE CUT (WATER BLAST) INTO EIGHT CIRCUMFERENTIAL SECTIONS.

② SEE PFOR CLARIFICATION FORM PAGE C-44A.

③ RUST CORROSION, MEDIUM-TO-HEAVY, OBSERVED AT THROAT RING ONLY METAL/ADHESIVE PRIMARY FAILURE MODE INTERFACE. NO CORROSION WAS OBSERVED ON THROAT INLET RING AND FORWARD 1.5 IN. OF THROAT RING METAL INTERFACE.

Preliminary PFA(s)? ☐ Yes ☒ No Preliminary PFA Number(s):

Clarification Form(s)? ☒ Yes ☐ No Clarification Form Page No.(s): C-44A

POSTFLIGHT OBSERVATION RECORD (PFOR) C-12
Nozzle Subassembly Phenolic Bondline Condition

Motor No.: 360T025	Side: Right (B)	Date: 8-20-92
Assessment Engineer(s)/Inspector(s): L.E. WILKES		
Phenolic Subassembly: Aft Inlet/Forward Nose Rings		

Record Primary Bondline/Phenolic Failure Mode Percentage (After Hydrolase and Wedge Removal):

	Degree Location							
	0-360							
Metal-to-Adhesive	100							
Within Adhesive								
Adhesive-to-GCP								
Within GCP								
GCP-to-CCP								
Within CCP								

Record Secondary Bondline Failure Mode Percentage (After Removal of Remaining Phenolics):

NA

	Degree Location							
Metal-to-Adhesive								
Within Adhesive								
Adhesive-to-GCP								

Phenolic Removal Method: NA

Metal Housing Bondline Surface Observations:

	Yes	No	Comment #
A. Soot?		✓	
B. Voids in Adhesive?		✓	1
C. Corrosion?	✓		2
D. Foreign Material?		✓	

Notes / Comments ① VERY FEW INTERMITTENT SMALL VOIDS 0.30 IN. MAX. DIAMETER LOCATED AROUND FULL CIRCUMFERENCE.

② INTERMITTENT LIGHT TO MEDIUM CORROSION OVER FULL METAL/ADHESIVE INTERFACE.

Preliminary PFAR(s)? Yes No Preliminary PFAR Number(s):

Clarification Form(s)? Yes No Clarification Form Page No.(s):

POSTFLIGHT OBSERVATION RECORD (PFOR) C-12
Nozzle Subassembly Phenolic Bondline Condition

Motor No.: 360T025 Side: Right (B) Date: 8-20-92

Assessment Engineer(s)/Inspector(s): L.E. WILKES

Phenolic Subassembly: Nose Cap

Record Primary Bondline/Phenolic Failure Mode Percentage (After Hydrolase and Wedge Removal):

	Degree Location							
	337-22	22-67	67-112	112-157	157-202	202-247	247-292	292-337
Metal-to-Adhesive	8	5	8		8	5	3	8
Within Adhesive								
Adhesive-to-GCP								
Within GCP	8	8	8	8	8	8	8	8
GCP-to-CCP	84	87	84	92	84	87	89	84
Within CCP								

Record Secondary Bondline Failure Mode Percentage (After Removal of Remaining Phenolics):

	Degree Location							
	337-22	22-67	67-112	112-157	157-202	202-247	247-292	292-337
Metal-to-Adhesive	25	15	25	15	30	25	20	20
Within Adhesive						1		1
Adhesive-to-GCP	75	85	75	85	70	74	80	79

Phenolic Removal Method: NYLON WEDGE & PEEL

Metal Housing Bondline Surface Observations:

	Yes	No	Comment #
A. Soot?		✓	
B. Voids in Adhesive?	✓		1
C. Corrosion?	✓		2
D. Foreign Material?		✓	

Notes / Comments ① SEE PFOR CLARIFICATION FORM PAGE C-46A.

② • INTERMITTENT LIGHT-TO-HEAVY CORROSION ON FORWARD 0.5 TO 1.5 IN. AROUND 90% OF CIRCUMFERENCE.
• INTERMITTENT LIGHT-TO-MEDIUM CORROSION ON AFT 3.0 IN. AROUND 50% OF CIRCUMFERENCE.

Preliminary PFAR(s)? ☐ Yes ☒ No Preliminary PFAR Number(s):

Clarification Form(s)? ☒ Yes ☐ No Clarification Form Page No.(s): C-46A

POSTFLIGHT OBSERVATION RECORD (PFOR) C-12
Nozzle Subassembly Phenolic Bondline Condition

Motor No.: 360T025	Side: Left Right (B)	Date: 19-Aug-92
Assessment Engineer(s)/Inspector(s): M. Clark, P. Miller		
Phenolic Subassembly: Cowl Assembly		

Record Primary Bondline/Phenolic Failure Mode Percentage (After Hydrolase and Wedge Removal):

	Degree Location							
	0-90	90-180	180-270	270-360				
Metal-to-Adhesive	100	100	100	100				
Within Adhesive								
Adhesive-to-SCP								
Within SCP								
SCP-to-CCP								
Within CCP								

Record Secondary Bondline Failure Mode Percentage (After Removal of Remaining Phenolics):

	Degree Location							
Metal-to-Adhesive								
Within Adhesive								
Adhesive-to-SCP								

Phenolic Removal Method: _____

Metal Housing Bondline Surface Observations:

	Yes	No	Comment #
A. Soot?		X	
B. Voids in Adhesive?		X	
C. Corrosion?	X		1
D. Foreign Material?		X	

Notes / Comments

1. Medium corrosion seen on Housing

Preliminary PFAR(s)? _____ Yes X No Preliminary PFAR Number(s): _____

Clarification Form(s)? _____ Yes X No Clarification Form Page No.(s): _____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-12
Nozzle Subassembly Phenolic Bondline Condition

Motor No.: 360T025	Side: Right (B)	Date: 8-26-92
--------------------	-----------------	---------------

Assessment Engineer(s)/Inspector(s): L.E. WILKES / P. MILLER

Phenolic Subassembly: Fixed Housing Assembly

Record Primary Bondline/Phenolic Failure Mode Percentage (After Hydrolase and Wedge Removal):

	Degree Location							
	0-360							
Metal-to-Adhesive								
Within Adhesive								
Adhesive-to-GCP								
Within GCP	50							
GCP-to-CCP	50							
Within CCP								

Record Secondary Bondline Failure Mode Percentage (After Removal of Remaining Phenolics):

	Degree Location							
	0-360							
Metal-to-Adhesive								
Within Adhesive								
Adhesive-to-GCP	100							

Phenolic Removal Method: WEDGE & PEEL

Metal Housing Bondline Surface Observations:	Yes	No	Comment #
A. Soot?	☒	☒	
B. Voids in Adhesive?	☐	☒	
C. Corrosion?	☐	☒	
D. Foreign Material?	☐	☒	

Notes / Comments ① SEE PFOR CLARIFICATION FORM PAGE C-48 A.

Special Issues 3.3.3

② NO LTDIS WERE FOUND ON THE SAMPLE TAKEN.

Preliminary PFAR(s)? Yes ☒ No ☐ Preliminary PFAR Number(s): _____

Clarification Form(s)? Yes ☒ No ☐ Clarification Form Page No.(s): C-48 A

POSTFLIGHT OBSERVATION RECORD (PFOR) C-13
Cowl Ring Phenolic (CCP) Section Condition

Motor No.: 360T025 Side: RIGHT (B) Date: 12/3/92

Assessment Engineer(s)/Inspector(s): J. J. [Signature]

Cowl Phenolic Section Observations:

- A. Cross-ply cracking in virgin material?
B. Ply lifting?

Yes No Comment #
____ / _____
____ / _____

Record the Cowl Char and Erosion Measurements Below:

Station	0°		90°		180°		270°	
Location	Erosion	Char	Erosion	Char	Erosion	Char	Erosion	Char
0.3	<u>.23</u>	<u>.58</u>	<u>.28</u>	<u>.62</u>	<u>.20</u>	<u>.67</u>	<u>—</u>	<u>.30*</u>
1.0	<u>.30</u>	<u>.52</u>	<u>.28</u>	<u>.60</u>	<u>.21</u>	<u>.72</u>	<u>.24</u>	<u>.53</u>
2.0	<u>.29</u>	<u>.54</u>	<u>.35</u>	<u>.52</u>	<u>.25</u>	<u>.68</u>	<u>.30</u>	<u>.52</u>
3.0	<u>.29</u>	<u>.56</u>	<u>.34</u>	<u>.52</u>	<u>.28</u>	<u>.62</u>	<u>.31</u>	<u>.48</u>
4.0	<u>.22</u>	<u>.64</u>	<u>.32</u>	<u>.60</u>	<u>.29</u>	<u>.63</u>	<u>.32</u>	<u>.52</u>
5.0	<u>.21</u>	<u>.64</u>	<u>.28</u>	<u>.64</u>	<u>—</u>	<u>.90*</u>	<u>—</u>	<u>.88*</u>
6.0	<u>.16</u>	<u>.62</u>	<u>.25</u>	<u>.68</u>	<u>—</u>	<u>1.02*</u>	<u>—</u>	<u>1.04*</u>
6.8	<u>N/A</u>	<u>—</u>	<u>—</u>	<u>1.11*</u>	<u>N/A</u>	<u>—</u>	<u>N/A</u>	<u>—</u>

Negative Margin of Safety? _____ Yes / No _____ Station: _____ Degree: _____

Notes / Comments * TOTAL HEAT AFFECTED DEPTH (CHAR + EROSION)

Preliminary PFAR(s)? _____ Yes _____ No / Preliminary PFAR Number(s): _____

Clarification Form(s)? _____ Yes _____ No / Clarification Form Page No.(s): _____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-14
Forward Exit Cone Phenolic (CCP) Section Condition

Motor No.: 360T025	Side: Right (B)	Date: 12/10/92
--------------------	-----------------	----------------

Assessment Engineer(s)/Inspector(s): WALKER

Forward Exit Cone Phenolic Section Observations:

	Yes	No	Comment #
A. Cross-ply cracking in virgin material?	☐	☒	
B. Ply lifting?	☐	☒	

Record the Forward Exit Cone Char and Erosion Measurements Below:

Station	0°		90°		180°		270°	
Location	Erosion	Char	Erosion	Char	Erosion	Char	Erosion	Char
1.0	.37	.76	.35	.83	.35	.75	.37	.79
4.0	.36	.70	.35	.73	.38	.73	.36	.74
4.6	.36	.69	.34	.71	.36	.69	.37	.72
8.0	.34	.74	N/A		.30	.78	.33	.73
12.0	N/A				N/A		N/A	
16.0								
20.0								
24.0								
28.0								
32.0								
32.9								
34.0								

Negative Margin of Safety? ☐ Yes ☒ No Station: _____ Degree: _____

Notes / Comments

Preliminary PFAR(s)? ☐ Yes ☒ No Preliminary PFAR Number(s): _____
Clarification Form(s)? ☐ Yes ☒ No Clarification Form Page No.(s): _____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-15
Fixed Housing Phenolic (CCP) Section Condition

Motor No.: 360T025	Side: Right (B)	Date: 12/12/02
--------------------	-----------------	----------------

Assessment Engineer(s)/Inspector(s): J. J. J. J.

Fixed Housing Phenolic Section Observations:

	Yes	No	Comment #
A. Cross-ply cracking in virgin material?	☐	☒	
B. Ply lifting?	☐	☒	

Record the Fixed Housing Char and Erosion Measurements Below:

Station	0°		90°		180°		270°	
Location	Erosion	Char	Erosion	Char	Erosion	Char	Erosion	Char
0.0	.04	1.09	.02	.98	.05	.98	.04	1.09
1.0	0	1.08	0	1.00	.03	.91	.05	1.02
2.0	0	1.01	0	.90	0	.83	0	.87
3.0	0	.96	0	.89	0	.90	0	.92
4.0	0	.95	0	.87	0	.89	0	.94
5.0	0	1.01	0	.83	0	.83	0	.98
6.0	.01	1.03	0	.84	0	.81	0	.94
7.0	0	1.02	0	.86	0	.81	0	.89
8.0	0	.93	0	.79	0	.74	0	.78
9.0	—	.72*	0	.69	—	.65*	0	.71
10.75	—	1.69*	—	1.75*	—	1.84*	—	1.73*

Negative Margin of Safety? ☐ Yes ☒ No Station: _____ Degree: _____

Notes / Comments * TOTAL HER = AFFECTED 24.7% (1.00 - 1.00)

Preliminary PFAR(s)? ☐ Yes ☒ No Preliminary PFAR Number(s): _____

Clarification Form(s)? ☐ Yes ☒ No Clarification Form Page No.(s): _____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-16
Throat Inlet Assembly Phenolic (CCP) Section Condition

Motor No.: 360T025	Side: Right (B)	Date: 12/10/92
Assessment Engineer(s)/Inspector(s): <u>T. J. Moore</u>		

Throat Inlet Assembly Phenolic Section Observations:

	Yes	No	Comment #
A. Cross-ply cracking in virgin material?	<u> </u>	<u> / </u>	<u> </u>
B. Ply lifting?	<u> </u>	<u> / </u>	<u> </u>

Record the Throat Inlet Ring and Throat Ring Char and Erosion Measurements Below:

Station	0°		90°		180°		270°	
Location	Erosion	Char	Erosion	Char	Erosion	Char	Erosion	Char
1.0	<u>1.03</u>	<u>.63</u>	<u>1.06</u>	<u>.59</u>	<u>1.07</u>	<u>.64</u>	<u>N/A</u>	<u> </u>
2.0	<u>1.08</u>	<u>.58</u>	<u>1.10</u>	<u>.62</u>	<u>1.13</u>	<u>.62</u>	<u> </u>	<u> </u>
4.0	<u>1.14</u>	<u>.56</u>	<u>1.17</u>	<u>.57</u>	<u>1.17</u>	<u>.60</u>	<u> </u>	<u> </u>
6.0	<u>1.07</u>	<u>.55</u>	<u>1.20</u>	<u>.54</u>	<u>1.20</u>	<u>.57</u>	<u> </u>	<u> </u>
8.0	<u>1.18</u>	<u>.57</u>	<u>1.21</u>	<u>.52</u>	<u>1.22</u>	<u>.54</u>	<u>N/A</u>	<u> </u>
10.0	<u>1.17</u>	<u>.48</u>	<u>1.21</u>	<u>.47</u>	<u>1.17</u>	<u>.56</u>	<u>1.20</u>	<u>.48</u>
12.0	<u>1.16</u>	<u>.46</u>	<u>1.20</u>	<u>.47</u>	<u>1.19</u>	<u>.55</u>	<u>1.20</u>	<u>.49</u>
14.0	<u>1.15</u>	<u>.46</u>	<u>1.17</u>	<u>.49</u>	<u>1.16</u>	<u>.58</u>	<u>1.21</u>	<u>.51</u>
16.0	<u>1.08</u>	<u>.50</u>	<u>1.08</u>	<u>.55</u>	<u>1.05</u>	<u>.54</u>	<u>1.14</u>	<u>.51</u>
18.0	<u>.96</u>	<u>.53</u>	<u>.90</u>	<u>.57</u>	<u>.92</u>	<u>.47</u>	<u>1.02</u>	<u>.58</u>
20.0	<u>.75</u>	<u>.67</u>	<u>.70</u>	<u>.61</u>	<u>.70</u>	<u>.64</u>	<u>.80</u>	<u>.61</u>
22.0	<u>.46</u>	<u>.78</u>	<u>.38</u>	<u>.78</u>	<u>.43</u>	<u>.75</u>	<u>.52</u>	<u>.77</u>
23.0	<u>.35</u>	<u>.87</u>	<u>.32</u>	<u>.78</u>	<u>.37</u>	<u>.78</u>	<u>.49</u>	<u>.77</u>

Negative Margin of Safety? Yes / No Station: Degree:

Notes / Comments

Preliminary PFAR(s)? Yes / No Preliminary PFAR Number(s):

Clarification Form(s)? Yes / No Clarification Form Page No.(s):

POSTFLIGHT OBSERVATION RECORD (PFOR) C-17

Nose Cap Phenolic (CCP) Section Condition

Motor No.: 360T025	Side: Right (B)	Date: 12/10/92
--------------------	-----------------	----------------

Assessment Engineer(s)/Inspector(s): T. W. K. K.

Nose Cap Phenolic Section Observations:

	Yes	No	Comment #
A. Cross-ply cracking in virgin material?	<u> </u>	<u> ✓ </u>	<u> </u>
B. Ply lifting?	<u> </u>	<u> ✓ </u>	<u> </u>

Record the Nose Cap Char and Erosion Measurements Below:

Station	0°		90°		180°		270°	
Location	Erosion	Char	Erosion	Char	Erosion	Char	Erosion	Char
1.5	<u>—</u>	<u>.92*</u>	<u>—</u>	<u>.77*</u>	<u>—</u>	<u>.84*</u>	<u>—</u>	<u>.91*</u>
4.0	<u>.36</u>	<u>.54</u>	<u>.35</u>	<u>.56</u>	<u>.33</u>	<u>.56</u>	<u>.36</u>	<u>.57</u>
6.0	<u>.36</u>	<u>.57</u>	<u>.39</u>	<u>.54</u>	<u>.38</u>	<u>.55</u>	<u>.40</u>	<u>.56</u>
8.0	<u>.41</u>	<u>.54</u>	<u>.49</u>	<u>.46</u>	<u>.45</u>	<u>.56</u>	<u>.47</u>	<u>.53</u>
10.0	<u>.42</u>	<u>.53</u>	<u>.51</u>	<u>.53</u>	<u>.47</u>	<u>.52</u>	<u>.52</u>	<u>.51</u>
12.0	<u>.54</u>	<u>.49</u>	<u>.59</u>	<u>.44</u>	<u>.59</u>	<u>.45</u>	<u>.59</u>	<u>.47</u>
14.0	<u>.55</u>	<u>.50</u>	<u>.63</u>	<u>.41</u>	<u>.60</u>	<u>.44</u>	<u>.65</u>	<u>.44</u>
16.0	<u>.63</u>	<u>.43</u>	<u>.72</u>	<u>.41</u>	<u>.69</u>	<u>.37</u>	<u>.73</u>	<u>.46</u>
18.0	<u>.69</u>	<u>.41</u>	<u>.81</u>	<u>.41</u>	<u>.81</u>	<u>.41</u>	<u>.83</u>	<u>.44</u>
20.0	<u>.85</u>	<u>.45</u>	<u>1.02</u>	<u>.36</u>	<u>.98</u>	<u>.39</u>	<u>1.03</u>	<u>.38</u>
22.0	<u>1.25</u>	<u>.69</u>	<u>1.53</u>	<u>.63</u>	<u>1.52</u>	<u>.62</u>	<u>1.54</u>	<u>.65</u>
24.0	<u>1.49</u>	<u>.78</u>	<u>1.67</u>	<u>.70</u>	<u>1.71</u>	<u>.79</u>	<u>1.71</u>	<u>.66</u>
26.0	<u>1.07</u>	<u>.67</u>	<u>1.16</u>	<u>.81</u>	<u>1.19</u>	<u>.81</u>	<u>1.16</u>	<u>.76</u>

Negative Margin of Safety? Yes ✓ No Station: Degree:

Notes / Comments * TOTAL HEAT AFFECTED ZONE (CHAR - EROSION)

Preliminary PFAR(s)? Yes ✓ No Preliminary PFAR Number(s):

Clarification Form(s)? Yes ✓ No Clarification Form Page No.(s):

POSTFLIGHT OBSERVATION RECORD (PFOR) C-18
Forward Nose Ring and Aft Inlet Ring Phenolic (CCP) Section Condition

Motor No.: 380T025	Side: Right (B)	Date: 12/2/92
Assessment Engineer(s)/Inspector(s): J. WALKER		

Forward Nose and Aft Inlet Ring Phenolic Section Observations:	Yes	No	Comment #
A. Cross-ply cracking in virgin material?	☐	☒	
B. Ply lifting?	☐	☒	

Record the Forward Nose Ring (-503) Char and Erosion Measurements Below:

Station	0°		90°		180°		270°	
Location	Erosion	Char	Erosion	Char	Erosion	Char	Erosion	Char
28.0	.98	.79	1.04	.78	1.06	.77	—	1.80 *
30.0	.81	.68	.83	.70	.90	.68	.88	.72
32.0	.94	.55	.89	.63	.94	.59	.91	.60

Negative Margin of Safety? ☐ Yes ☒ No Station: _____ Degree: _____

Record the Aft Inlet Ring Char (-504) and Erosion Measurements Below:

Station	0°		90°		180°		270°	
Location	Erosion	Char	Erosion	Char	Erosion	Char	Erosion	Char
34.0	.83	.55	.86	.53	.86	.49	.85	.53
36.0	.81	.57	.87	.54	.90	.47	.87	.51
38.0	.91	.58	.91	.59	.90	.57	.94	.52
39.0	.92	.57	.95	.61	.92	.62	.97	.60

Negative Margin of Safety? ☐ Yes ☒ No Station: _____ Degree: _____

Notes / Comments *TOTAL HEAT REJECTED WITH (CHAR + EROSION)

Preliminary PFAR(s)? ☐ Yes ☒ No Preliminary PFAR Number(s): _____

Clarification Form(s)? ☐ Yes ☒ No Clarification Form Page No.(s): _____